

Crestron **DM-MD64X64/ DM-MD128X128**

DigitalMedia™ Switchers

Operations & Installation Guide



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Regulatory Compliance

As of the date of manufacture, the DM-MD64X64 and DM-MD128X128 have been tested and found to comply with specifications for CE marking.



Federal Communications Commission (FCC) Compliance Statement

This device complies with part 15 of the FCC Rules. Operation is subject to the following conditions:

(1) This device may not cause harmful interference and (2) this device must accept any interference received, including interference that may cause undesired operation.

CAUTION: Changes or modifications not expressly approved by the manufacturer responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Industry Canada (IC) Compliance Statement

CAN ICES-3(A)/NMB-3(A)

The DMB-I-S, DMB-I-S2, DMB-O-S, and DMB-O-S2 are Class 1 laser products. They comply with safety regulations of IEC 60825-1, FDA 21 CFR 1040.11 and FDA 21 CFR 1040.10.



WARNING: Visible and invisible laser radiation when open. Avoid direct exposure to beam.

NOTE: Plug the included dust cap into the optical transceiver when the fiber optic cable is unplugged.

WARNING: These are Class A products. In a domestic environment these products may cause radio interference in which case the user may be required to take adequate measures.

WARNING: There are no user-serviceable parts inside this equipment. Servicing must be performed by qualified personnel only.

WARNING: Before servicing this unit, disconnect all power cords.

Contents

DigitalMedia Switchers: DM-MD64X64/DM-MD128X128	1
Introduction	1
Features and Functions	1
Applications	7
Specifications	8
Physical Description	12
Setup	25
Network Wiring	25
Ethernet Setup	26
Identity Code	27
Installation	27
Hardware Hookup	29
User Interface Overview	34
Uploading and Upgrading	35
Using an FTP Client	35
Using an SD Card or USB Flash Drive	36
Problem Solving	37
Troubleshooting	37
Reference Documents	38
Further Inquiries	38
Future Updates	38
Appendix: DigitalMedia Blades	39
CPU Blade	39
Input Blades	43
Output Blades	58
Return and Warranty Policies	74
Merchandise Returns / Repair Service	74
Crestron Limited Warranty	74
GNU General Public License	75

DigitalMedia Switchers: DM-MD64X64/DM-MD128X128

Introduction

Crestron® DM® switchers provide the foundation for a complete DigitalMedia™ system, delivering an advanced 4K ultra high-definition AV signal routing solution that is extremely flexible and installer friendly. The DM-MD64X64 and DM-MD128X128 are modular matrix switchers designed for large-scale projects demanding ultimate reliability. They deliver ultra fast signal routing and pure, lossless distribution of HDMI® and other signals to support all the Blu-ray Disc® players, HDTV receivers, digital media servers, computers, HD cameras, and high-definition displays that fill any modern facility. DigitalMedia manages all of the disparate AV signals and devices to deliver a transparent user experience and ensure an optimum video image and audio signal at every location.

Features and Functions

- Provides lossless HD AV signal routing over twisted-pair wire or fiber
- Integrates video, audio, networking, and control over one wire or fiber strand
- Modular design configurable in blades of eight inputs or outputs
- Enables full matrix switching scalable from 8 x 8 to 64 x 64 (DM-MD64X64) or from 8 x 8 to 128 x 128 (DM-MD128X128)
- Handles HDMI with Deep Color, 3D, 4K Ultra HD, and high-bitrate 7.1 encoded audio¹
- HDBaseT® certified, which enables direct connection to third-party HDBaseT displays and sources²
- Supports up to 64 DM 8G® transmitters and 64 DM 8G receivers (DM-MD64X64) or up to 128 DM 8G transmitters and 128 DM 8G receivers (DM-MD128X128)

(Continued on following page)

1. Onboard HDMI output and analog audio input and output are future features that will be enabled through a future output blade and other components.
2. DM 8G+™ and HDBaseT input is a future feature that will be enabled through a future input blade.

Features and Functions

(Continued)

- Allows up to 330 foot (100 meter) wire distance via DM 8G+™ and HDBaseT^{1, 2, 3}
- Allows up to 1000 foot (300 meter) wire distance via DM 8G fiber^{3, 4}
- Allows up to 7.5 mile (12 km) wire distance via DM 8G single-mode fiber^{3, 5}
- QuickSwitch HD® technology manages HDCP (High-bandwidth Digital Content Protection) keys for fast and reliable switching
- Auto-Locking™ technology achieves rapid switching between disparate sources
- 15" color touch screen enables simplified front panel setup, operation, video preview, and troubleshooting
- Built-in web server enables full operation from any networked computer
- Allows system monitoring through front panel, web browser, control system, or Fusion RV®
- Allows independent scaling for every display device through select DM receivers
- Enables device control via CEC (Consumer Electronics Control)
- Distributes USB HID (Human Interface Device) mouse and keyboard signals between transmitters and receivers
- Supports expanded USB device support using USB extenders⁶
- Includes integrated Gigabit Ethernet switch
- Features hot-swappable redundant power supplies and fan tray with advanced status monitoring
- Hot-swappable I/O blades afford fast restoration of service with minimal disruption
- 14 U (DM-MD64X64) or 24 U (DM-MD128X128) 19-inch rack-mountable

1. DM 8G+ and HDBaseT input is a future feature that will be enabled through a future input blade.
2. The maximum cable length for DigitalMedia 8G+™ (DM 8G+) or HDBaseT is 330 feet (100 meters) for resolutions up to 1600 x 1200 and 1920 x 1200 (including 1080p60 and 2K) using DM-CBL-8G DigitalMedia 8G cable, DM-CBL DigitalMedia cable, DM-CBL-D DigitalMedia D cable, or third-party CAT5e (or better) UTP or STP. For higher resolutions (including 4K), the maximum wire length is 230 feet (70 meters) using DM-CBL-8G or 165 feet (50 meters) using DM-CBL, DM-CBL-D, or CAT5e. Shielded cable and connectors are recommended to safeguard against unpredictable environmental electrical noise which may impact performance at resolutions above 1080p. DM 8G+ is compatible with HDBaseT Alliance specifications for connecting to HDBaseT compliant equipment.
3. For complete system design guidelines, refer to the Crestron DigitalMedia Design Guide (Doc. 4546) at www.crestron.com/dmresources. All wire and cables sold separately.
4. The maximum DigitalMedia 8G fiber (DM 8G fiber) cable length is 1000 feet (300 meters) using CRESFIBER8G fiber optic cable or 500 feet (150 meters) using standard CRESFIBER, CRESFIBER-SINGLE-SC, or third-party OM3 simplex multimode fiber optic cable.
5. The maximum DigitalMedia 8G single-mode fiber (DM 8G SM fiber) cable length is 7.5 miles (12 km) using CRESFIBER8G-SM or third-party G.652.D (or better) single-mode fiber optic cable.
6. Expanded USB signal routing capability is available using USB-EXT-DM extenders (sold separately).

Featuring a scalable blade-based design, the DM switchers afford maximum input and output count in a condensed 14 U (DM-MD64X64) or 24 U (DM-MD128X128) rack-mountable chassis. The DM-MD64X64 is field configurable to handle up to 64 inputs and 64 outputs; the DM-MD128X128 is field configurable to handle up to 128 inputs and 128 outputs. The DM switchers support HDMI, HDBaseT, analog audio, and all types of DigitalMedia 8G™ signals.^{1,2} Through a selection of hot-swappable input and output blades and a variety of DM 8G transmitters and receivers, the DM switchers allow extensive connectivity throughout a commercial or residential facility, supporting a wide range of signal types through one switcher.

Integrated Ethernet networking and USB distribution provide a complete connectivity solution combined with built-in Crestron control³ for managing the displays and other room devices without necessitating any additional wiring. Hot-swappable redundant power supplies and advanced system-wide monitoring ensure continuous, dependable operation for mission-critical applications. User-friendly operation, setup, and troubleshooting tools are provided through the front panel touch screen or web browser interface to make setting up a complete multiroom HD system easy.

DigitalMedia 8G

DigitalMedia 8G provides a true 1-wire transport for moving high-definition video, audio, and Ethernet over low-cost twisted pair or fiber optic cable without compression or repeaters. Engineered for ultra high-bandwidth and ultimate scalability, DM 8G handles uncompressed video beyond high definition with support for HDCP, Deep Color, 3D, and 4K Ultra HD. Audio capabilities include support for high-bitrate 7.1 audio formats such as Dolby® TrueHD and DTS-HD Master Audio™ as well as uncompressed linear PCM. All signals are transported over one 8-conductor twisted pair wire or one strand of multimode or single-mode fiber. DM 8G enables wire distances up to 330 feet (100 meters) via DM 8G+ (DM 8G over CAT5e), 1000 feet (300 meters) via DM 8G fiber (DM 8G over multimode fiber), or 7.5 miles (12 km) via DM 8G SM fiber (DM 8G over single-mode fiber).^{2, 4, 5, 6, 7}

1. Onboard HDMI output and analog audio input and output are future features that will be enabled through a future output blade and other components.
2. DM 8G+ and HDBaseT input is a future feature that will be enabled through a future input blade.
3. Crestron control via the DM network requires a Crestron control system (sold separately).
4. The maximum cable length for DigitalMedia 8G+ (DM 8G+) or HDBaseT is 330 feet (100 meters) for resolutions up to 1600 x 1200 and 1920 x 1200 (including 1080p60 and 2K) using DM-CBL-8G DigitalMedia 8G cable, DM-CBL DigitalMedia cable, DM-CBL-D DigitalMedia D cable, or third-party CAT5e (or better) UTP or STP. For higher resolutions (including 4K), the maximum wire length is 230 feet (70 meters) using DM-CBL-8G or 165 feet (50 meters) using DM-CBL, DM-CBL-D, or CAT5e. Shielded cable and connectors are recommended to safeguard against unpredictable environmental electrical noise which may impact performance at resolutions above 1080p. DM 8G+ is compatible with HDBaseT Alliance specifications for connecting to HDBaseT compliant equipment.
5. For complete system design guidelines, refer to the Crestron DigitalMedia Design Guide (Doc. 4546). All wire and cables sold separately.
6. The maximum DigitalMedia 8G fiber (DM 8G fiber) cable length is 1000 feet (300 meters) using CRESFIBER8G fiber optic cable or 500 feet (150 meters) using standard CRESFIBER, CRESFIBER-SINGLE-SC, or third-party OM3 simplex multimode fiber optic cable.
7. The maximum DigitalMedia 8G single-mode fiber (DM 8G SM fiber) cable length is 7.5 miles (12 km) using CRESFIBER8G-SM or third-party G.652.D (or better) single-mode fiber optic cable.

HDBaseT Certified

Crestron DigitalMedia 8G+™ technology is designed using HDBaseT Alliance specifications, ensuring interoperability with third-party HDBaseT products. Via DM 8G+, the DM switchers can be connected directly to any HDBaseT compliant device without requiring a DM transmitter or receiver. HDBaseT connectivity through the DM switchers converges uncompressed full HD digital video, audio, Ethernet, power and control signals through a single CAT5e or CAT6 cable over distances up to 330 feet (100 meters).¹

Modular Architecture

The DM-MD64X64 features a modular architecture with 8 input blade slots and 8 output blade slots; the DM-MD128X128 features a modular architecture with 16 input blade slots and 16 output blade slots. Each blade slot on the DM switchers are field installable, allowing for easy and flexible system configuration with the ability to make changes to the system as needs change. The input and output blades are hot-swappable to facilitate servicing without shutting down the whole switcher. I/O blades are offered to support the choice of HDMI, HDBaseT, analog audio, DM 8G+, DM 8G fiber, and DM 8G single-mode fiber. Each blade provides 8 inputs or outputs of any one type.^{1, 2}

QuickSwitch HD

Handling high-definition digital media means handling HDCP, the encryption scheme that content providers use to protect their DVDs, Blu-ray discs, and broadcast signals against unauthorized copying. Viewing HDCP encrypted content requires a source device to “authenticate” each display and signal processor in the system and issue it a “key” before the content can be viewed. Ordinarily, this causes a complete loss of signal for up to 15 seconds each time a new source or display is selected anywhere in the system. In addition, every source device has a limited number of keys available; therefore, if too many displays are connected, the source stops outputting a signal without warning. Crestron QuickSwitch HD, however, manages the keys for every HDCP-compliant device in the system, maintaining continuous authentication for each device to ensure fast and reliable routing of any source to any number of display devices.

Auto-Locking Technology

Crestron Auto-Locking technology enables super fast signal switching by instantaneously configuring every device in the signal path as soon as the signal hits the first device. Whether switching between sources or TV channels, Auto-Locking significantly reduces the time it takes each device to sense the new signal and configure itself to handle the changes, virtually eliminating any noticeable gap while switching.

EDID Format Management

DigitalMedia manages the EDID (Extended Display Identification Data) that modern digital devices use to communicate their capabilities. Through the DM switchers, the format and resolution capabilities of each device can be assessed, allowing the installer to configure EDID appropriately for the most desirable and predictable behavior.

1. DM 8G+ and HDBaseT input is a future feature that will be enabled through a future input blade.
2. Onboard HDMI output and analog audio input and output are future features that will be enabled through a future output blade and other components.

A Scaler for Every Display

Scaling capability can be added to any DM system using select DM receivers (sold separately) with built-in high-definition scalers. By placing an independent high-performance scaler at every display device, DigitalMedia delivers the most flexible and user-friendly solution for routing multiple disparate sources to many different display devices. This “Distributed Scaler Approach” ensures an optimal image on every screen regardless of the sources that are selected. Distributed scaling allows a high-resolution computer source to be viewed on any display in the building. It also allows a high-definition 3D source to be viewed on lower resolution 2D displays without compromising the original signal, letting a theater’s full HD 1080p 3D image be shared with smaller, lesser displays in other rooms.

Built-In Ethernet Switch

In addition to transporting digital video and audio, DigitalMedia can also extend 10/100 Ethernet to each display and source device via select DM receivers and transmitters (sold separately), providing high-speed connectivity for any room device that requires a LAN connection. Ethernet is also utilized internally by the Crestron control bus to manage all of the DM devices in the system and provide display control in each room. Through its Gigabit Ethernet port, the DM switchers provide a single-point connection to a corporate LAN or home network, requiring just one IP address for the complete DM system.

USB Switch

Along with video, audio, and Ethernet, DigitalMedia also provides for the routing of USB HID signals, allowing a USB HID compliant keyboard or mouse at one location to control a computer or media server in another location, whether just across the room or in another building. USB HID connectivity is provided through select DM receivers and transmitters (sold separately).

Crestron also offers USB extenders (sold separately) to enable the routing of virtually any type of USB peripheral to any host device, all managed through the DigitalMedia system. Connect a local extender module (USB-EXT-DM-LOCAL) to each computer, media server, game system, annotator, and any other host for which communication or control is desired. Install a remote extender module (USB-EXT-DM-REMOTE) at every display location to connect keyboards, mice, game controllers, whiteboards, flash drives, cameras, and mobile devices. Every module communicates with a DM switcher over the local Ethernet network or via a direct connection to the LAN port of a DM transmitter or receiver.

CEC Embedded Device Control

The primary objective of every Crestron system is to enable precisely the control desired for a seamless user experience. DigitalMedia provides an alternative to conventional IR and RS-232 device control by harnessing the CEC signal embedded in HDMI. Through its connection to the control system, the DM switchers provide a gateway for controlling many devices through their HDMI or HDBaseT connections, potentially eliminating the need for any dedicated control wires or IR emitters. Through proper CEC signal management, DigitalMedia allows control of each device as desired.

Touch Screen Front Panel

Simplified setup and operation of the DM switchers are provided through a large 15” color touch screen. Through its user-friendly graphical interface, the touch screen enables the routing of AV signals with the ability to view resolution and format information for every input and output signal, and even preview a live video image of any input. Configuration and diagnostics capabilities include monitoring of the status for each I/O blade, fan tray, and power supply, configuration of Ethernet settings, and updating of the firmware for all connected devices.

Web Browser Control

The DM switchers also include a built-in web server, enabling full operation and monitoring through any networked computer with a web browser. Password protection prevents unauthorized access to this feature.

Hot-Swappable Redundant Power Supplies

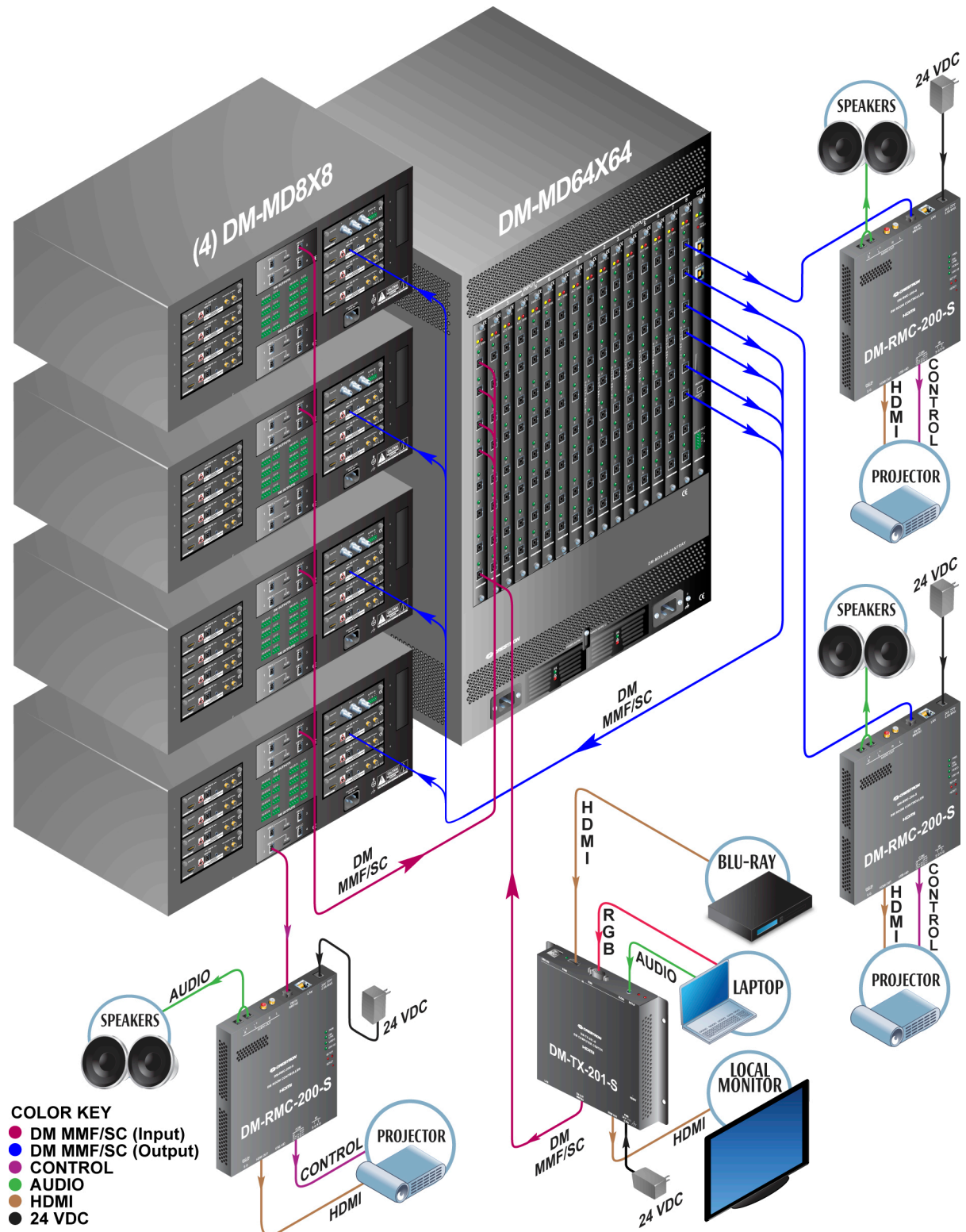
The DM switchers deliver enhanced reliability for mission-critical applications, employing hot-swappable redundant power supplies to ensure continuous operation throughout the life of the system. Two power supplies occupy the DM-MD64X64; three power supplies occupy the DM-MD128X128. Each of the onboard power supplies has a demonstrated MTBF (Mean Time Between Failures) of over a half million hours. In the unlikely event of an individual power supply fault, the DM-MD64X64 continues to operate unhindered on only one power supply and the DM-MD128X128 continues to operate on only two power supplies. Clear indication of such a fault is provided on the unit’s front panel, and the power supplies can also be remotely monitored via a control system touch screen, mobile device, or Crestron Fusion RV Remote Asset Management Software. A modular hot-swappable plug-in design allows any power supply to be replaced in seconds without shutting down the switcher or removing it from the equipment rack.

NOTE: Although the DM-MD64X64 and DM-MD128X128 continue to operate if a single power supply fails, it is recommended that the failed power supply be replaced as soon as possible to restore power supply redundancy.

Applications

The diagram below shows a DM-MD64X64 in a typical application.

DM-MD64X64 in a Typical Application



Specifications

Specifications for the DM switchers are listed in the following table.

DM Switcher Specifications

SPECIFICATION	DETAILS
Video	
Switcher	64 x 64 (DM-MD64X64) or 128 x 128 (DM-MD128X128) digital matrix, modular input/output blades, Crestron QuickSwitch HD
Input Signal Types	Configurable via modular plug-in blades supporting HDMI, DisplayPort Multimode, ¹ DVI, ¹ HDBaseT, ² DM 8G+, ² DM 8G fiber, and DM 8G SM fiber
Output Signal Types	Configurable via modular plug-in blades supporting HDMI, ³ DVI, ¹ HDBaseT, DM 8G+, DM 8G fiber, and DM 8G SM fiber
Formats	HDMI, HDBaseT, or DM 8G with Deep Color, 3D, and 4K; DVI; HDCP content protection support
Input Resolutions	Refer to "Input Blades" on page 43 in the Appendix for the specifications of each input blade.
Output Resolutions	Refer to "Output Blades" on page 58 in the Appendix for the specifications of each output blade.
Audio	
Switcher	64 x 64 (DM-MD64X64) or 128 x 128 (DM-MD128X128) digital multichannel audio-follow-video matrix switching, monitor output (audio breakaway not supported)
Input Signal Types	Configurable via modular plug-in blades supporting HDMI, DisplayPort Multimode, ¹ HDBaseT, ² analog (stereo 2-channel), DM 8G+, ² DM 8G fiber, and DM 8G SM fiber
Output Signal Types	Configurable via modular plug-in blades supporting HDMI, ³ HDBaseT, analog (stereo 2-channel), ³ DM 8G+, DM 8G fiber, and DM 8G SM fiber
Formats	Dolby Digital®, Dolby Digital EX, Dolby Digital Plus, Dolby TrueHD, DTS®, DTS-ES, DTS 96/24, DTS-HD High Res, DTS-HD Master Audio, up to 8-channel PCM
Communications	
Ethernet	10/100/1000 Mbps, auto-switching, auto-negotiating, auto-discovery, full/half duplex, DHCP, web server for remote configuration and operation
USB	USB signal routing via select transmitters, receivers, and extenders; USB service port for computer console

(Continued on following page)

DM Switcher Specifications (Continued)

SPECIFICATION	DETAILS
Communications (Continued) DigitalMedia	DM 8G+ (HDBaseT compliant), ² DM 8G fiber, DM 8G SM fiber, HDCP management, EDID format management, CEC
Ethernet Switch	19-port switch (DM-MD64X64) or 35-port switch (DM-MD128X128) with Private Network Mode; Provides (1) rear panel 10BASE-T/100BASE-TX/1000BASE-T LAN port, (1) 10BASE-T/100BASE-TX/1000BASE-T rear panel SERVICE port, and (16) DM-MD64X64 or (32) DM-MD128X128 internal 1000 Mbps ports for the I/O blades plus (1) internal 10BASE-T/100BASE-TX port for the CPU
USB Switch	64 x 64 (DM-MD64X64) or 128 x 128 (DM-MD128X128) matrix, follow video or breakaway
Power Requirements Main Power	DM-MD64X64: 16 A @ 100-127 Vac or 8 A @ 200-240 Vac, 50/60 Hz; Requires (2) 20 A @ 100-127 Vac or (2) 10 A @ 200-240 Vac circuits DM-MD128X128: 16 A @ 100-127 Vac or 8 A @ 200-240 Vac, 50/60 Hz; Requires (3) 20 A @ 100-127 Vac or (3) 10 A @ 200-240 Vac circuits
Environmental Temperature Humidity Heat Dissipation	32° to 104° F (0° to 40° C) 10% to 90% RH (non-condensing) DM-MD64X64: 5460 Btu/h maximum, 3000 Btu/h typical, with all blade slots occupied DM-MD128X128: 10920 Btu/h maximum, 6000 Btu/h typical, with all blade slots occupied
Enclosure Chassis Front Panel Mounting	Metal with black finish, integrated rack ears, vented sides and rear, fan cooled Metal, black finish with polycarbonate label overlay, plastic touch screen bezel 14 U (DM-MD64X64) or 24 U (DM-MD128X128) 19-inch rack mountable (rack ears built in)

(Continued on following page)

DM Switcher Specifications (Continued)

SPECIFICATION	DETAILS
Dimensions	
Height	DM-MD64X64: 24.44 in (621 mm) DM-MD128X128: 41.97 in (1066 mm)
Width	19.00 in (483 mm)
Depth	DM-MD64X64: 16.26 in (413 mm) without I/O blades DM-MD128X128: 16.26 in (413 mm) without I/O blades, 19.55 in (497 mm) including front and rear handles
Weight	DM-MD64X64: 49.0 lb (22.3 kg) without I/O blades DM-MD128X128: 86.0 lb (39.0 kg) without I/O blades
Included Accessories	
DMB-CPU-64	CPU Blade for DM-MD64X64 (Quantity 1 Included)
DMB-CPU-128	CPU Blade for DM-MD128X128 (Quantity 1 Included)
DM-MDA-64-FANTRAY	Fan Tray for DM-MD64X64 (Quantity 1 Included)
DM-MDA-64-PWS	Power Supply for DM-MD64X64 (Quantity 2 Included)
DM-MDA-128-FANTRAY	Fan Tray for DM-MD128X128 (Quantity 1 Included)
DM-MDA-128-PWS	Power Supply for DM-MD128X128 (Quantity 3 Included)
Available Accessories	
AIR SR6	AIR® 6.5" 2-Way Surface Mount Speakers
AMP-2210S	2 x 210 W Commercial Power Amplifier, 4/8 Ω
CRESFIBER-CONN-SC50UM-12	CresFiber® Fiber Optic Cable Connector
CRESFIBER-SINGLE-SC	CresFiber Simplex Fiber Optic Cable Assembly, 50/125, SC
CRESFIBER-SINGLE-SC-ARMORED	CresFiber ARMORED Simplex Fiber Optic Cable Assembly, 50/125, SC
CRESFIBER-SINGLE-SC-CLEAR	CresFiber CLEAR Simplex Fiber Optic Cable Assembly, 50/125, SC
CRESFIBER-TK	CresFiber Termination Kit
CRESFIBER8G	CresFiber 8G Fiber Optic Cable
CRESFIBER8G-SM	CresFiber 8G Single-Mode Fiber Optic Cable
CRESFIBER8G-SM-CONN-LC-12	CresFiber 8G Single-Mode Fiber Optic Cable Connectors
DM-8G-CONN	DigitalMedia 8G Cable Connectors
DM-8G-CONN-WG	DigitalMedia 8G Cable Connector with Wire Guide

(Continued on following page)

DM Switcher Specifications (Continued)

SPECIFICATION	DETAILS
Available Accessories (Continued)	
DM-8G-CRIMP	Crimping Tool for DM-8G-CONN
DM-8G-CRIMP-WG	Crimping Tool for DM-8G-CONN-WG
DM-CBL-8G	DigitalMedia 8G Cable
DMB-4K-I-HD	8-Channel 4K HDMI Input Blade for DM Switchers
DMB-4K-O-C	8-Channel 4K DM 8G+ Output Blade for DM Switchers
DMB-I-S	8-Channel DM 8G Fiber Input Blade for DM Switchers
DMB-I-S2	8-Channel DM 8G Single-Mode Fiber Input Blade for DM Switchers
DMB-O-S	8-Channel DM 8G Fiber Output Blade for DM Switchers
DMB-O-S2	8-Channel DM 8G Single-Mode Fiber Output Blade for DM Switchers
USB-EXT-DM-LOCAL	USB Extender Module for Host
USB-EXT-DM-REMOTE	USB Extender Module for Devices

1. DVI and DisplayPort Multimode connectivity is supported via an HDMI input port using a suitable adapter or interface cable. DVI output is supported via an HDMI output port using a suitable adapter or interface cable. CBL-HD-DVI interface cables sold separately.
2. DM 8G+ and HDBaseT input is a future feature that will be enabled through a future input blade.
3. Onboard HDMI output and analog audio input and output are future features that will be enabled through a future output blade and other components.

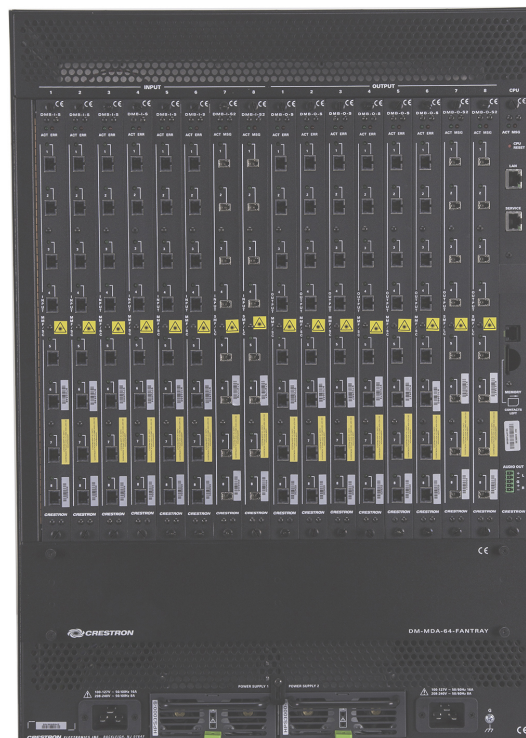
Physical Description

This section provides information on the connections, controls, and indicators available on the DM switchers.

DM-MD64X64 Physical View (Front)

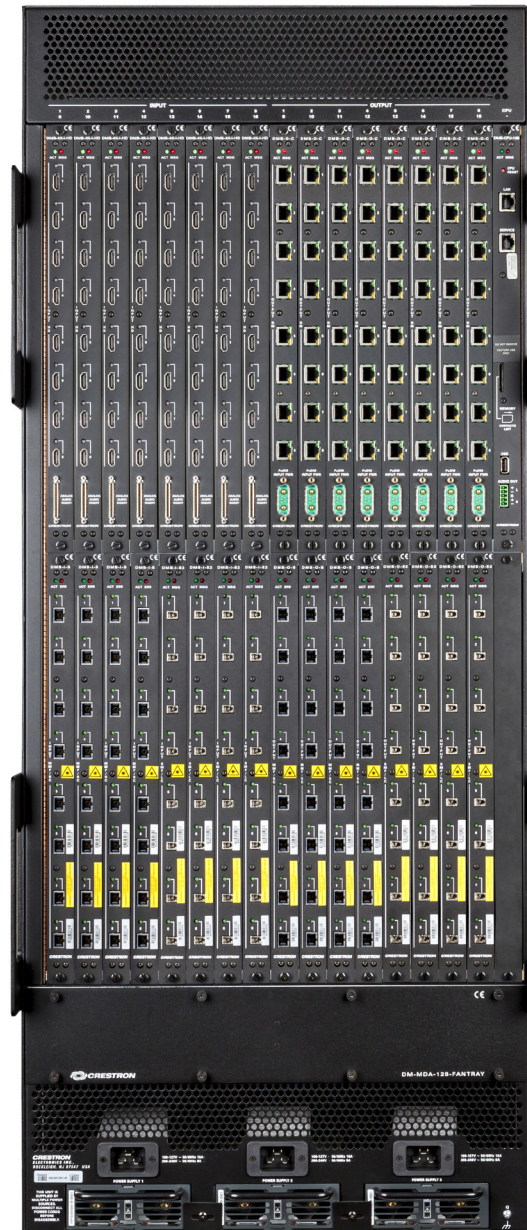


DM-MD64X64 Physical View (Rear)

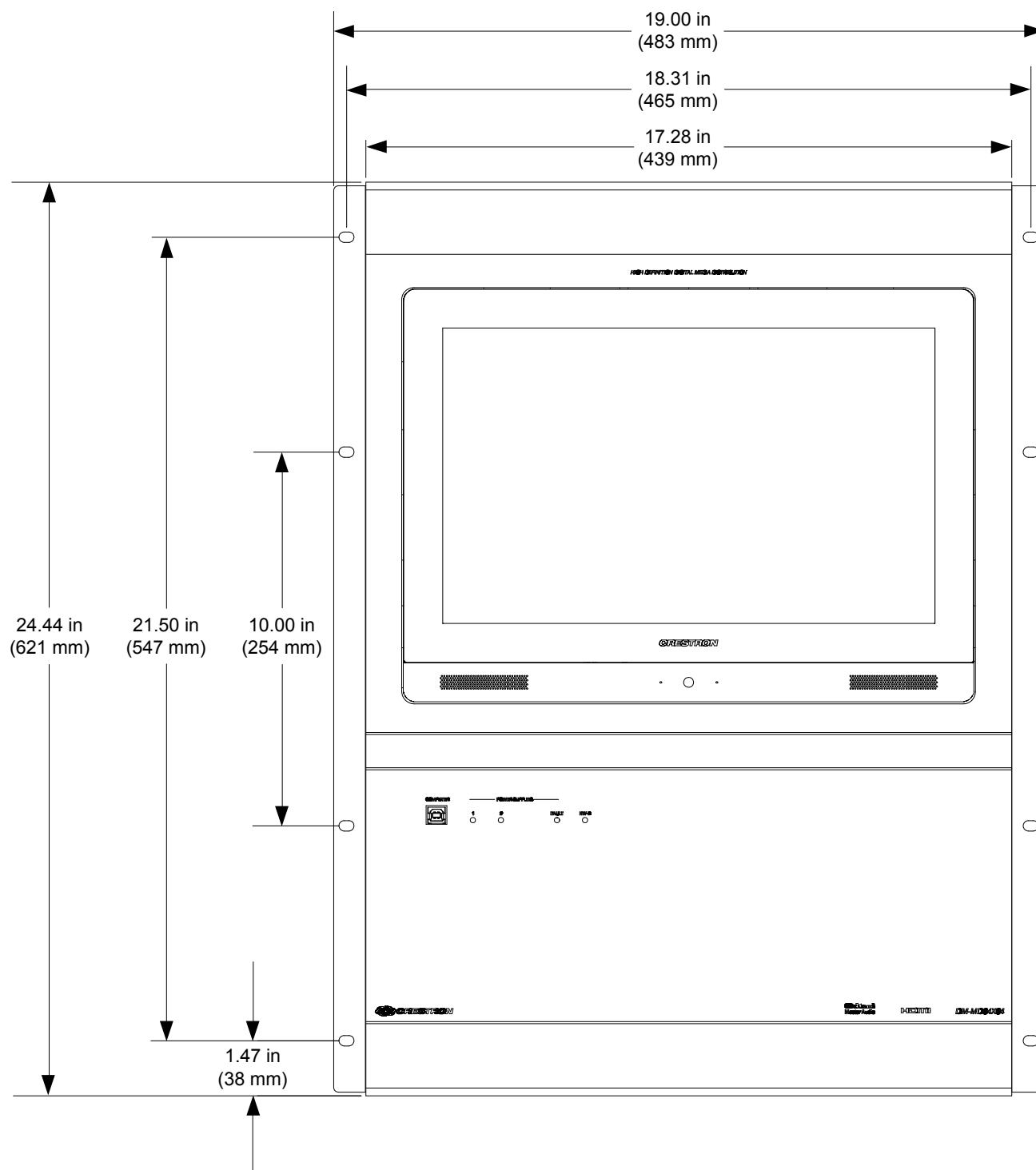


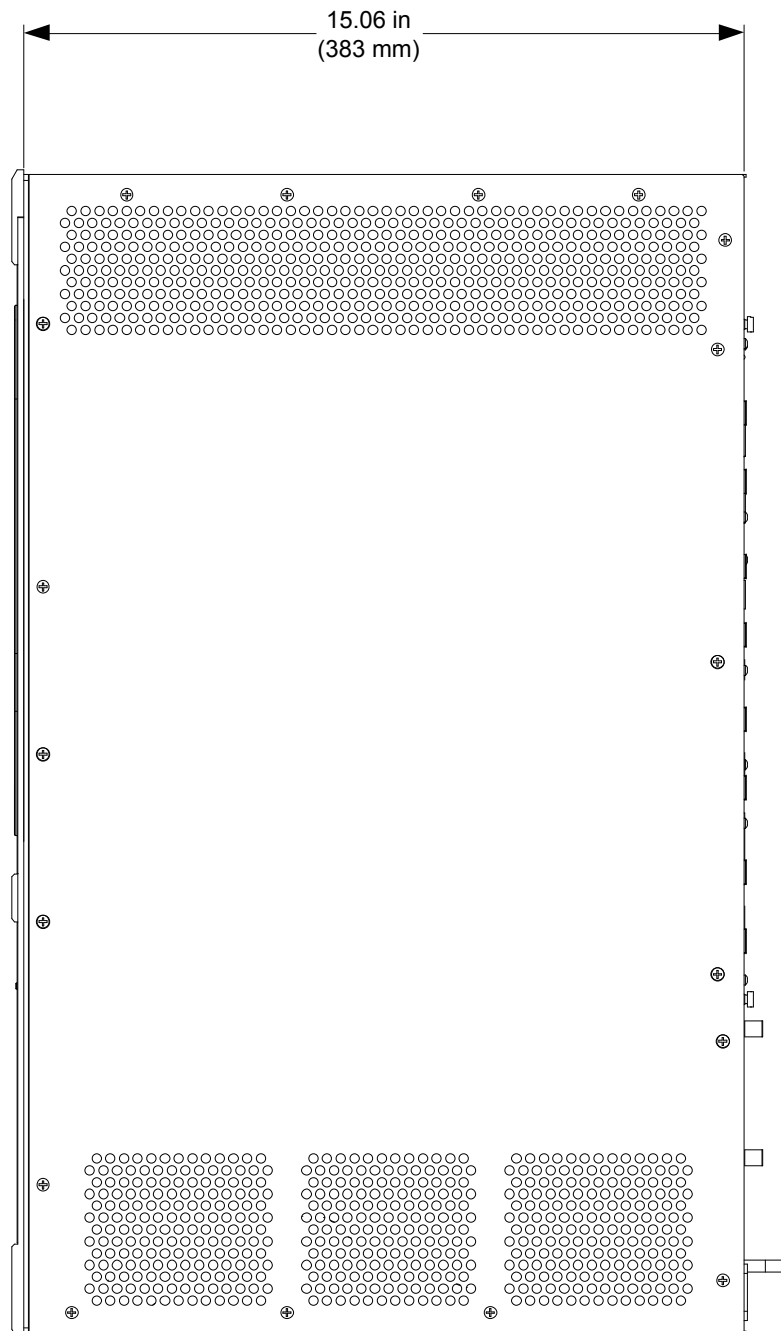
DM-MD128X128 Physical View (Front)



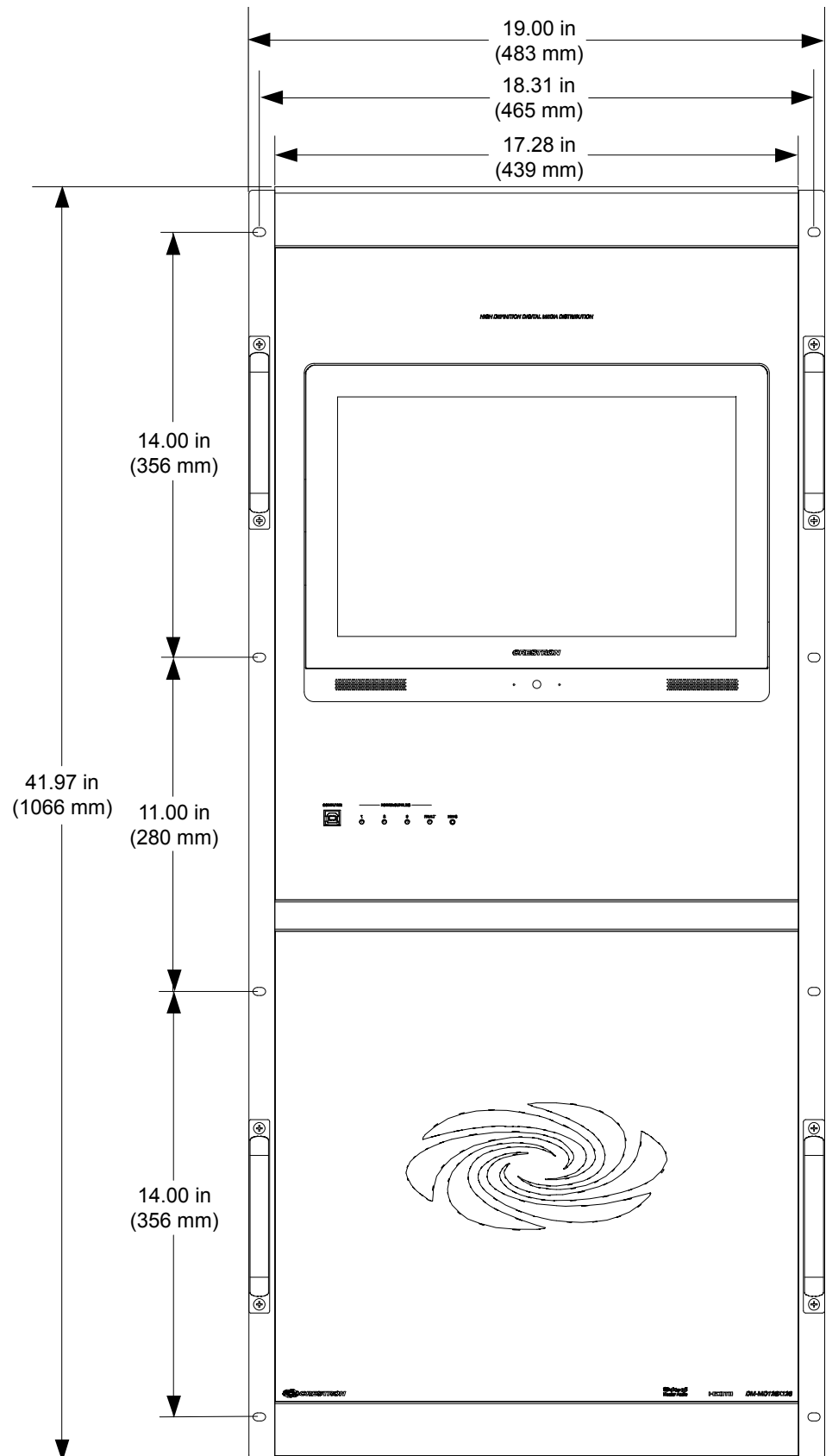
DM-MD128X128 Physical View (Rear)

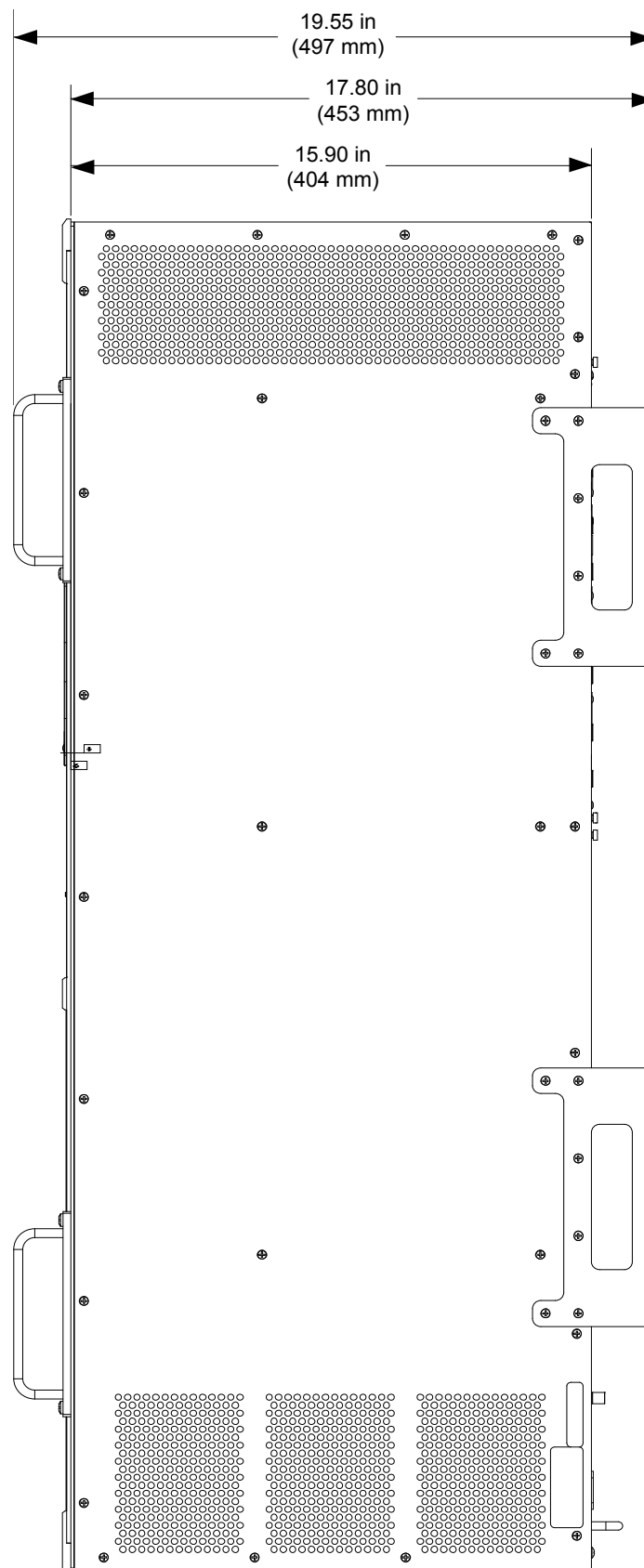
DM-MD64X64 Overall Dimensions (Front View)



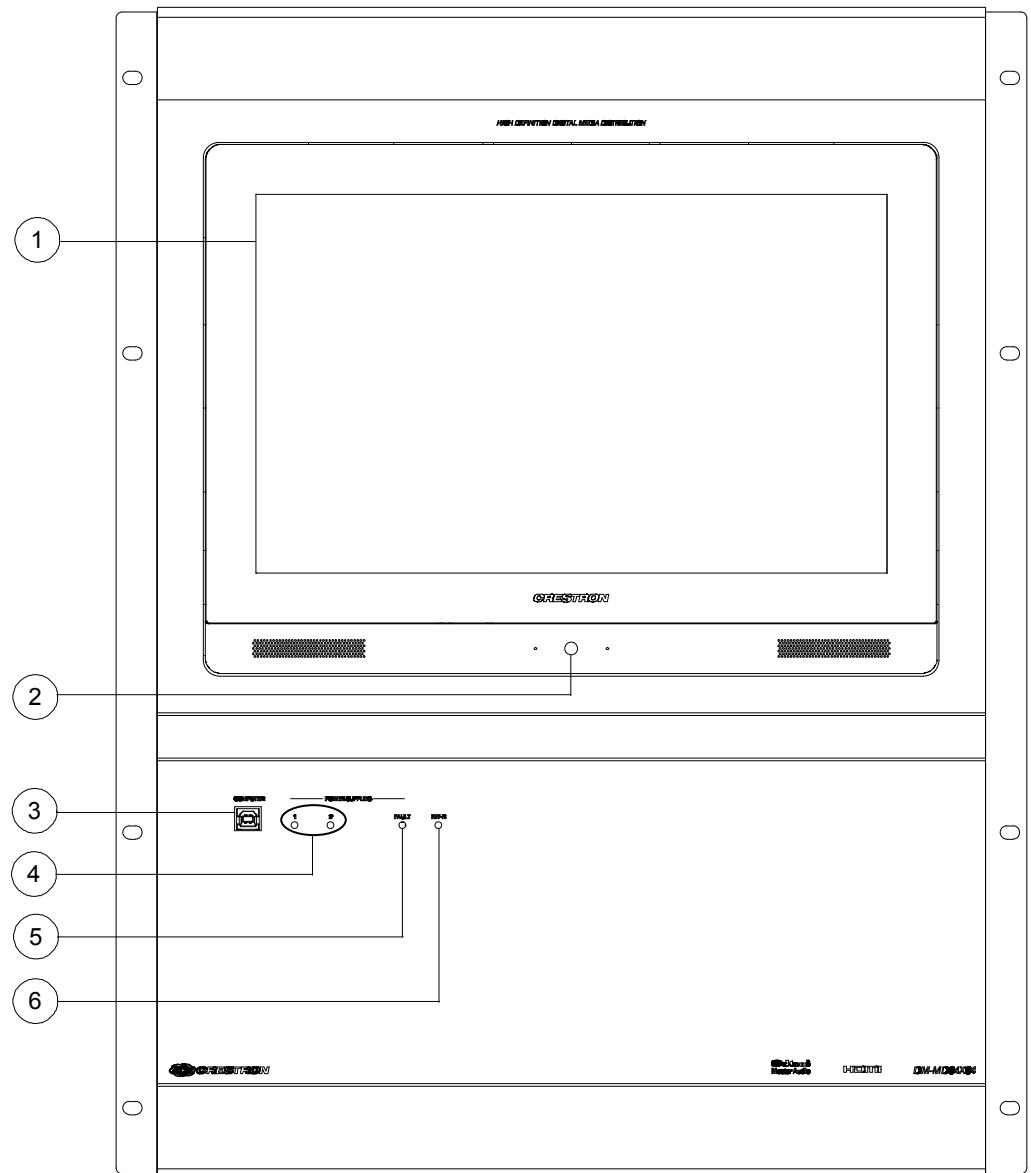
DM-MD64X64 Overall Dimensions (Side View)

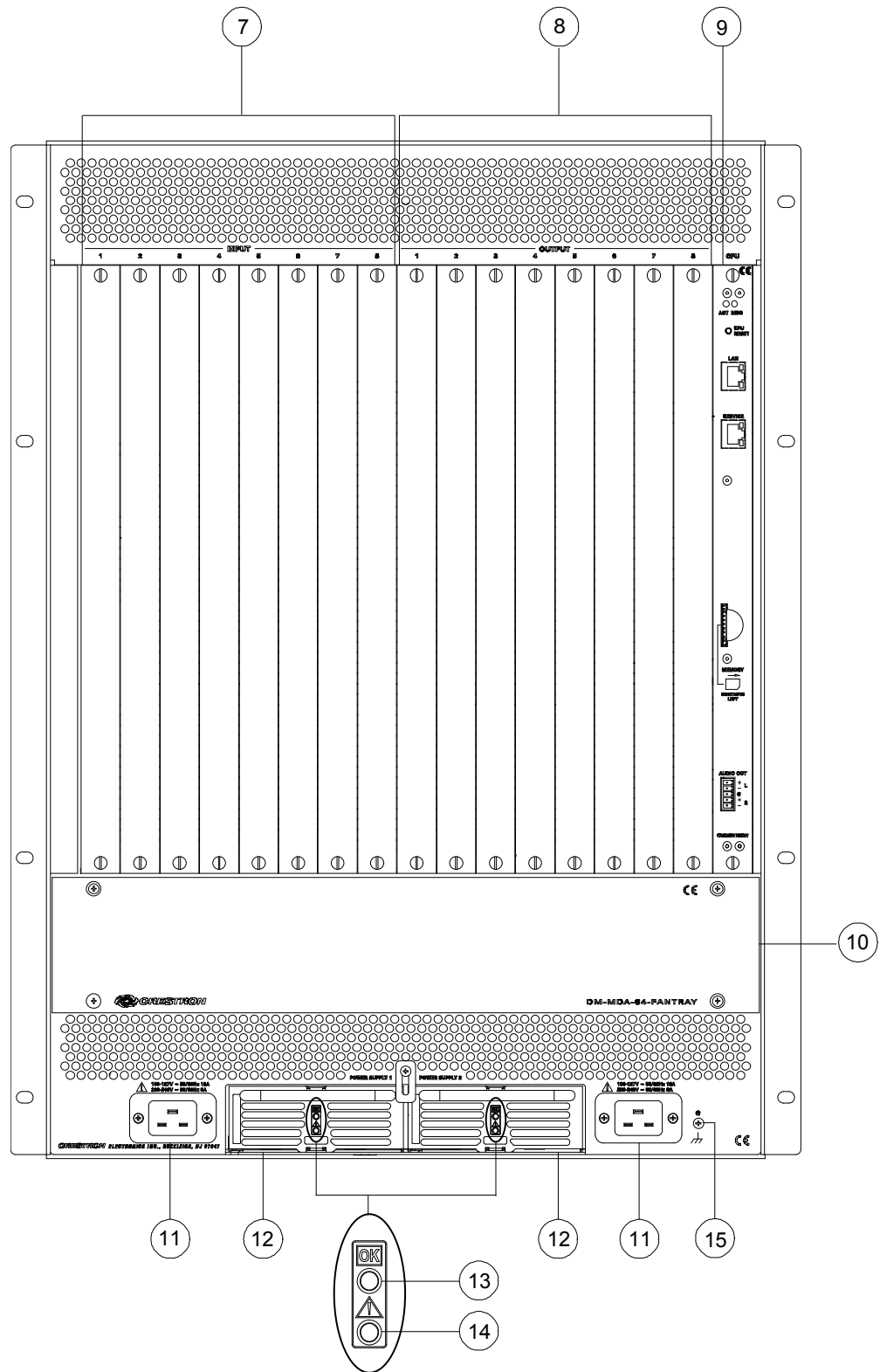
DM-MD128X128 Overall Dimensions (Front View)



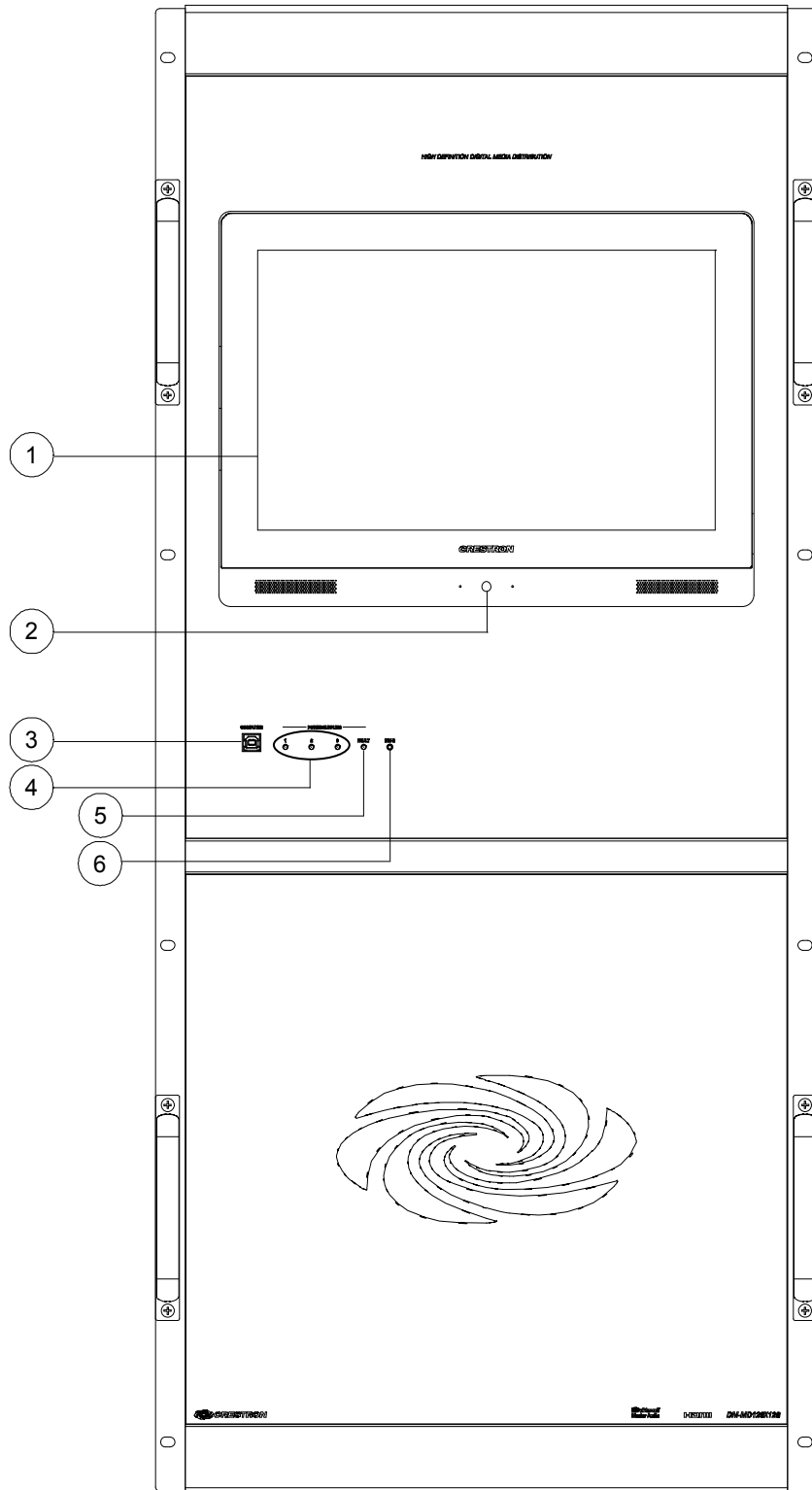
DM-MD128X128 Overall Dimensions (Side View)

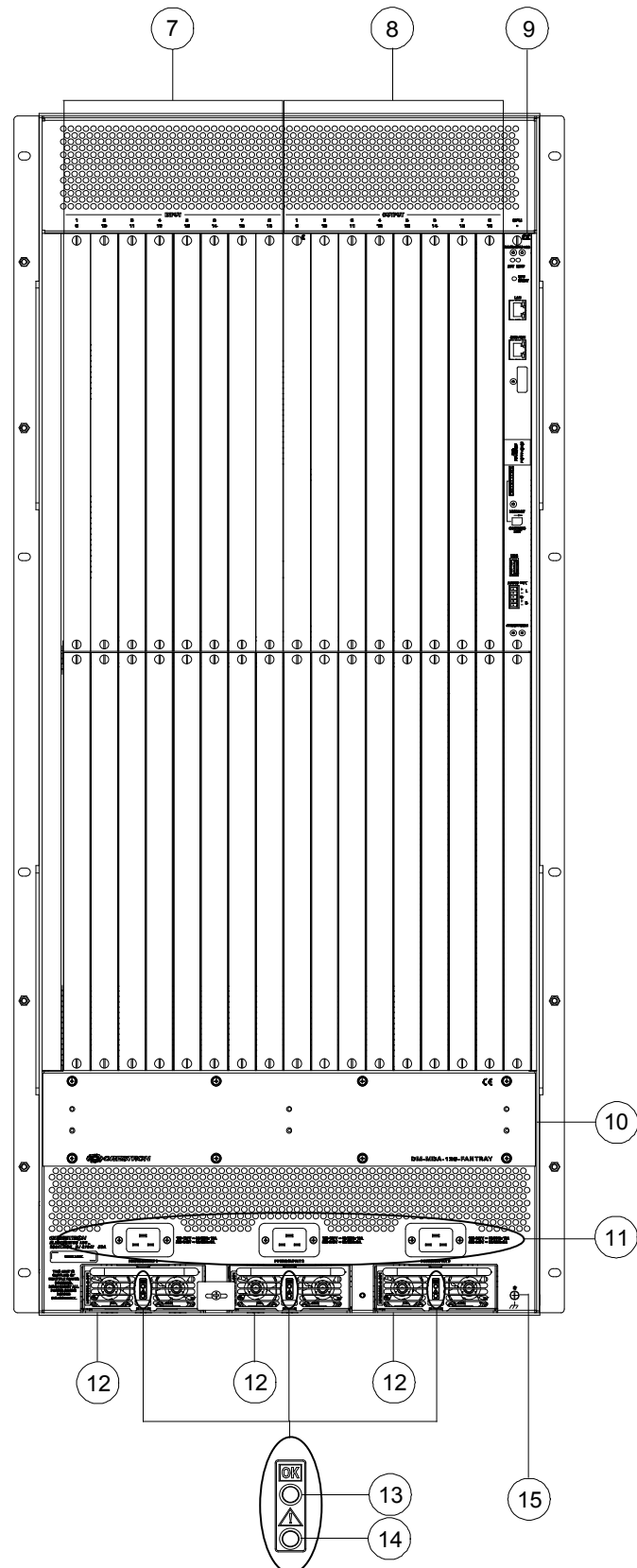
DM-MD64X64 Connectors, Controls, and Indicators (Front View)



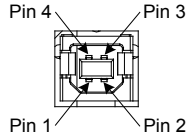
DM-MD64X64 Connectors, Controls, and Indicators (Rear View)

DM-MD128X128 Connectors, Controls, and Indicators (Front View)



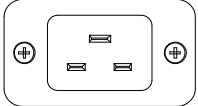
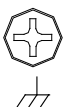
DM-MD128X128 Connectors, Controls, and Indicators (Rear View)

Connectors, Controls, and Indicators

#	CONNECTORS, CONTROLS, AND INDICATORS	DESCRIPTION										
1	Touch Screen	15 inch (381 mm) diagonal TFT active matrix color LCD, 15:9 WXGA, 1280 x 768 pixels, resistive touch membrane, amplified speakers; Provides signal routing, video input preview, video and audio signal information, system diagnostics, setup and configuration										
2	Touch Screen Hard Key	Not used										
3	COMPUTER 	(1) USB Type B female; USB computer console port (6 foot [~1.8 meter] cable included) <table><tr><th>PIN</th><th>DESCRIPTION</th></tr><tr><td>1</td><td>+5 VDC</td></tr><tr><td>2</td><td>Data -</td></tr><tr><td>3</td><td>Data +</td></tr><tr><td>4</td><td>Ground</td></tr></table>	PIN	DESCRIPTION	1	+5 VDC	2	Data -	3	Data +	4	Ground
PIN	DESCRIPTION											
1	+5 VDC											
2	Data -											
3	Data +											
4	Ground											
4	POWER SUPPLIES (1-2 or 1-3) LEDs	(2 [DM-MD64X64] or 3 [DM-MD128X128]) Green LEDs, indicate when each corresponding power supply is functioning										
5	POWER SUPPLIES FAULT LED	(1) Red flashing LED, indicates a fault with any power supply ¹										
6	HW-R Button	(1) Recessed miniature push button for hardware reset, reboots the switcher										
7	INPUT (1-8 or 1-16) LEDs	(8 [DM-MD64X64] or 16 [DM-MD128X128]) Input blade slots, hot-swappable; Each slot accepts (1) DMB-I series input blade. Refer to “Input Blades” on page 43 in the Appendix for additional information.										
8	OUTPUT (1-8 or 1-16) LEDs	(8 [DM-MD64X64] or 16 [DM-MD128X128]) Output blade slots, hot-swappable; Each slot accepts (1) DMB-O series output blade. Refer to “Output Blades” on page 58 in the Appendix for additional information.										
9	CPU	Accepts (1) DMB-CPU-64 CPU blade (included with DM-MD64X64) or (1) DMB-CPU-128 CPU blade (included with DM-MD128X128). Refer to “CPU Blade” on page 39 in the Appendix for additional information.										
10	FANTRAY	(1) Fan tray, hot-swappable, Crestron model DM-MDA-64-FANTRAY for DM-MD64X64 and DM-MDA-128-FANTRAY for DM-MD128X128										

(Continued on following page)

Connectors, Controls, and Indicators (Continued)

#	CONNECTORS, CONTROLS, AND INDICATORS	DESCRIPTION
11	100-127V ~ 50/60Hz 16A, 200-240V ~ 50/60Hz 8A 	(2 [DM-MD64X64] or 3 [DM-MD128X128]) IEC 60320 C-20 main power inlets; Mate with removable power cords (included) ²
12	POWER SUPPLY (1-2 or 1-3)	(2 [DM-MD64X64] or 3 [DM-MD128X128]) High efficiency (>90%), hot-swappable, variable speed fan cooled power supplies, Crestron model DM-MDA-64-PWS (included with DM-MD64X64) and DM-MDA-128-PWS (included with DM-MD128X128); Demonstrated MTBF: >500,000 hours per power supply; Redundancy: Complete unit continues to operate at full capacity on one (DM-MD64X64) or two (DM-MD128X128) functioning power supplies ¹
13	OK LEDs	(2 [DM-MD64X64] or 3 [DM-MD128X128]) Green LEDs, indicate when each corresponding power supply is powered and functioning: <ul style="list-style-type: none"> Blinking green indicates that ac power is being applied and standby output voltage is available. Solid green indicates that dc output is enabled and operational.
14	! LEDs	(2 [DM-MD64X64] or 3 [DM-MD128X128]) Amber LEDs, each indicates a fault with the corresponding power supply: <ul style="list-style-type: none"> Solid amber indicates power supply failure or overcurrent protection of standby voltage. Blinking amber indicates overcurrent protection of the main circuit.
15	G 	(1) 6-32 screw, chassis ground lug

- Although the DM-MD64X64 and DM-MD128X128 continue to operate if a single power supply fails, it is recommended that the failed power supply be replaced as soon as possible to restore power supply redundancy.
- All power inputs on the DM switchers must connect to the same ac voltage type—either 120 Vac or 220 Vac.

Setup

Network Wiring

When wiring the DM network, consider the following:

- Use Crestron Certified Wire.
- Use Crestron power supplies for Crestron equipment.

CAUTION: Failure to use Crestron power supplies could cause equipment damage or void the Crestron warranty.

- Provide sufficient power to the system.
- The maximum DigitalMedia 8G fiber (DM 8G fiber) cable length is 1000 feet (300 meters) using CRESFIBER8G fiber optic cable or 500 feet (150 meters) using standard CRESFIBER, CRESFIBER-SINGLE-SC, or third-party OM3 simplex multimode fiber optic cable.
- The maximum DigitalMedia 8G single-mode fiber (DM 8G SM fiber) cable length is 7.5 miles (12 km) using CRESFIBER8G-SM or third-party G.652.D (or better) single-mode fiber optic cable.
- The maximum cable length for DigitalMedia 8G+ (DM 8G+) or HDBaseT is 330 feet (100 meters) for resolutions up to 1600 x 1200 and 1920 x 1200 (including 1080p60 and 2K) using DM-CBL-8G DigitalMedia 8G cable, DM-CBL DigitalMedia cable, DM-CBL-D DigitalMedia D cable, or third-party CAT5e (or better) UTP or STP. For higher resolutions (including 4K), the maximum wire length is 230 feet (70 meters) using DM-CBL-8G or 165 feet (50 meters) using DM-CBL, DM-CBL-D, or CAT5e. Shielded cable and connectors are recommended to safeguard against unpredictable environmental electrical noise which may impact performance at resolutions above 1080p. DM 8G+ is compatible with HDBaseT Alliance specifications for connecting to HDBaseT compliant equipment.

Maximum Cable Length

RESOLUTION	CABLE TYPE	
	DM-CBL-8G	CAT5e (OR BETTER) UTP OR STP
1080p60 Full HD 1600 x 1200 UXGA 1920 x 1200 WUXGA 2048 x 1080 2K DCI	330 feet (100 meters)	330 feet (100 meters)
2560 x 1440 WQHD 2560 x 1600 WQXGA 3840 x 2160 4K Ultra HD 4096 x 2160 4K DCI	230 feet (70 meters)	165 feet (50 meters)

Refer to the Crestron DigitalMedia Design Guide (Doc.4546) for complete system design guidelines.

The DM switchers also use high-speed Ethernet for communications between the device and a control system, computer, media server and other IP-based devices. For general information on connecting Ethernet devices in a Crestron system, refer to the Crestron e-Control® Reference Guide (Doc. 6052) at www.crestron.com/manuals.

For information specifically related to Ethernet connectivity using DigitalMedia devices, refer to the Crestron IP Considerations Guide for the IT Professional (Doc. 4579) at www.crestron.com/dmresources.

Ethernet Setup

The DM switcher can operate in *DHCP* or *Static IP Address* mode. When DHCP is enabled, the IP address is set dynamically. When DHCP is disabled, the IP address is set manually.

A fully loaded DM-MD64X64 and DM-MD128X128 can contain up to 145 and 289 Ethernet-enabled devices, respectively, with each device requiring its own IP address. As a result, the DM switchers always operate in Private Network Mode (PNM) to control the Ethernet settings of DM endpoints (transmitters and receivers). PNM allows only the DM switchers to require an IP address from the public network, thereby reducing the amount of IP configuration necessary and allowing the DM endpoints to be swappable without reconfiguration. In a DM system containing a single DM switcher, the DM switcher is the only DM device that consumes an IP address. All DM I/O blades and DM endpoints that are connected to the DM switcher are hidden from the public network and cannot be reached directly; instead, all communication is managed through the DM switcher. As a result, PNM creates a completely private IP network for all DM blades and endpoints.

NOTE: When connected to a DM switcher, a DM endpoint must not have its convenience Ethernet port connected to the LAN. A DM endpoint receives its network connection via the DM switcher. The convenience Ethernet port of a DM endpoint is available for connection to a network device such as a PC, Blu-ray player, or TV.

For installation in a corporate or university setting, PNM does not heavily impact the network. Ethernet ports on DM endpoints remain visible to the public network. PNM also prevents RSTP (Rapid Spanning Tree Protocol) traffic from reaching the public network.

When multiple DM switchers are cascaded, a unique system ID must be assigned to each switcher. The system ID of each switcher determines the internal IP address to be used by each device in the DM system. The system ID can be set using the front panel touch screen or from a web browser.

With PNM always enabled, a VLAN (virtual LAN) is not used to separate public and private Ethernet traffic. Instead, two physically separate Ethernet ports divide public traffic from private traffic. The main CPU is the only device connected to both networks. The CPU may receive an instruction from a device on the public network, such as a Crestron control system, and may then create a new instruction for a private device such as a DM blade or endpoint. Ethernet packets from the public network, however, can never traverse the private network. Similarly, Ethernet packets from the private network can never traverse the public network.

Identity Code

The IP ID can be set from the front panel touch screen or from a web browser. The IP IDs of multiple DM switchers in the same system must be unique.

When setting the IP ID, consider the following:

- The IP ID of each unit must match an IP ID specified in the Crestron Studio™ or SIMPL Windows program.
- Each device using IP to communicate with a control system must have a unique IP ID.

DigitalMedia devices that receive their IP address configuration via the DM switcher also receive their IP table configuration from the DM-MD64X64.

Installation

Ventilation

The DM switcher should be used in a well-ventilated area. The venting holes should not be obstructed under any circumstances.

To prevent overheating, do not operate this product in an area that exceeds the environmental temperature range listed in the table of specifications. Consider using forced air ventilation and/or increasing the spacing between units to reduce overheating.

Contact with thermal insulating materials should be avoided on all sides of the unit.

NOTE: If the DM switcher detects an unsafe operating temperature, it will enter low power protection mode and, as a result, video functionality will be disabled.

Rack Mounting

The DM switcher can be mounted in a rack or stacked with other equipment.

WARNING: Do not lift the DM switcher using the power supply handles. Doing so will damage the unit and can cause bodily injury.

NOTE: The DM switcher has rack ears integrated into the chassis. They cannot be removed.

NOTE: To facilitate installation, four handles are provided on the front and on the rear of the DM-MD128X128. If desired, the handles on the front of the unit can be removed after installation using a Phillips head screwdriver.

To attach the unit to a rack, use four screws (not supplied) for each rack ear.

WARNING: To prevent bodily injury when mounting or servicing this unit in a rack, observe the following guidelines:

- When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.
 - If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.
-

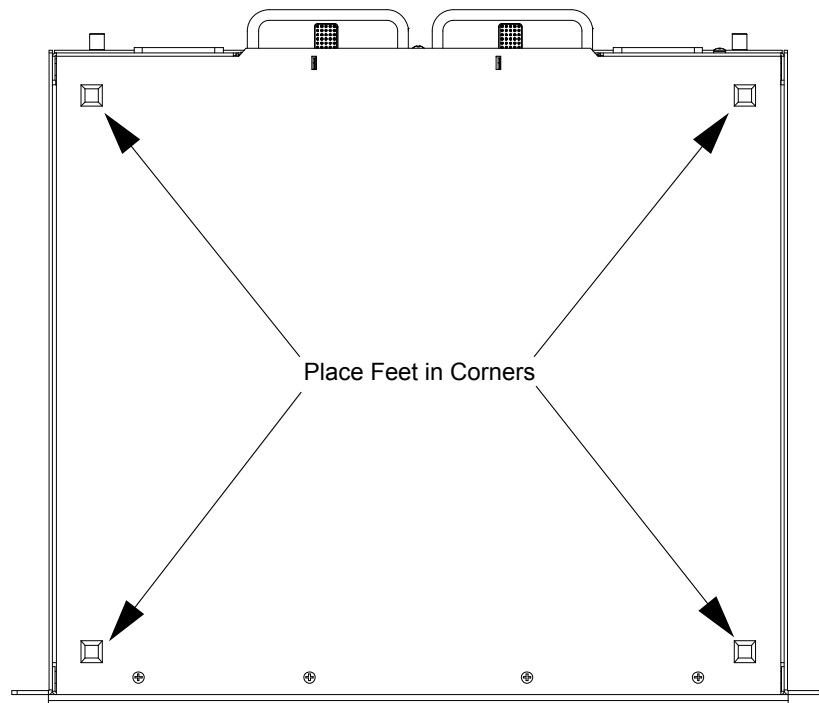
NOTE: Observe the following guidelines when installing equipment in a rack:

- **Elevated Operating Ambient** - If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (T_{ma}) specified by the manufacturer.
- **Reduced Air Flow** - Installation of the equipment in a rack should be such that the amount of airflow required for safe operation of the equipment is not compromised.
- **Mechanical Loading** - Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.
- **Circuit Overloading** - Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.
- **Reliable Earthing** - Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g., use of power strips).

NOTE: If rack mounting is not required, rubber feet are provided for tabletop mounting or stacking. Apply the feet near the corner edges on the underside of the unit.

Stacking

Four “feet” are provided with the DM switcher so that if the unit is not rack mounted, the rubber feet can provide stability when the unit is placed on a flat surface or stacked. These feet should be attached near the corner edges on the underside of the unit prior to the hookup procedure. Refer to the following illustration for placement of the feet.

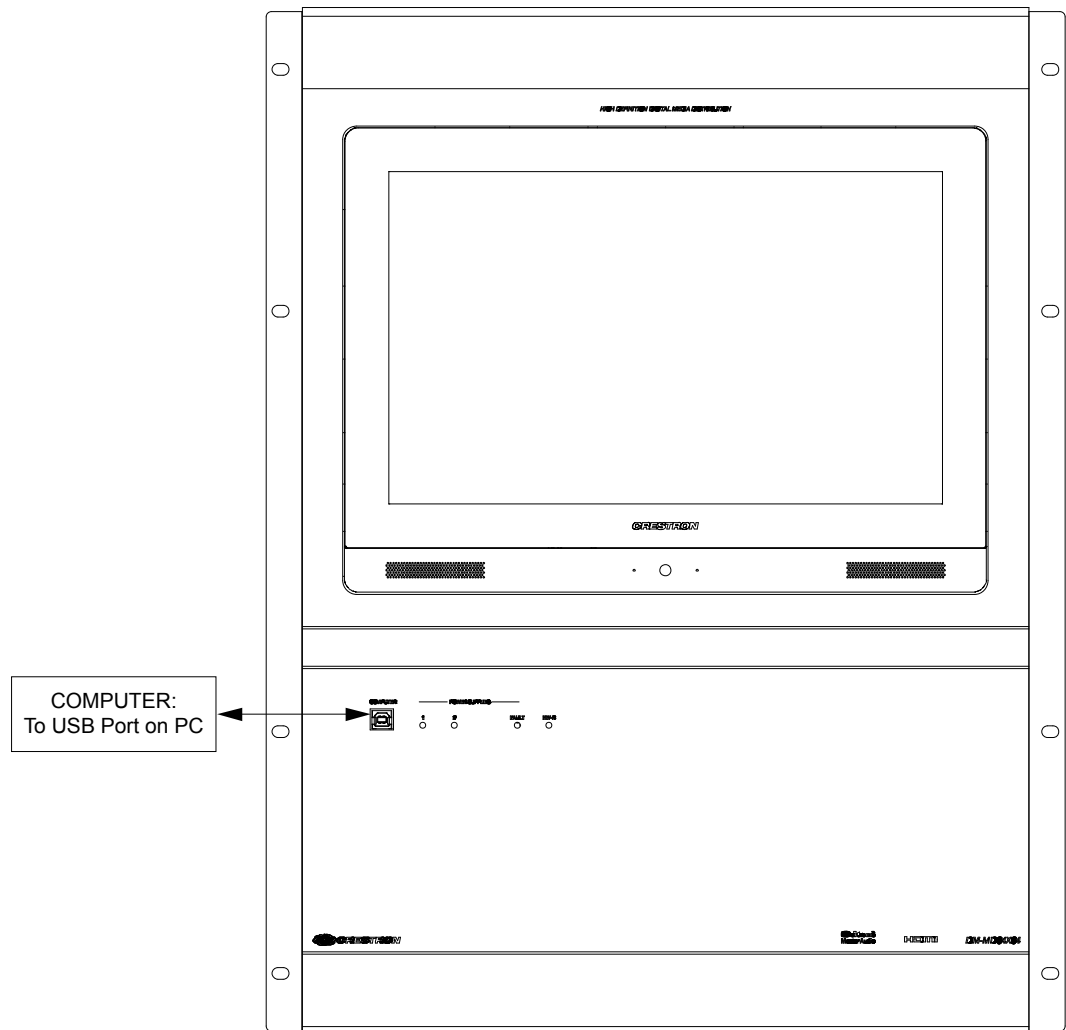
Foot Placement for the DM Switchers (DM-MD64X64 Shown)

Hardware Hookup

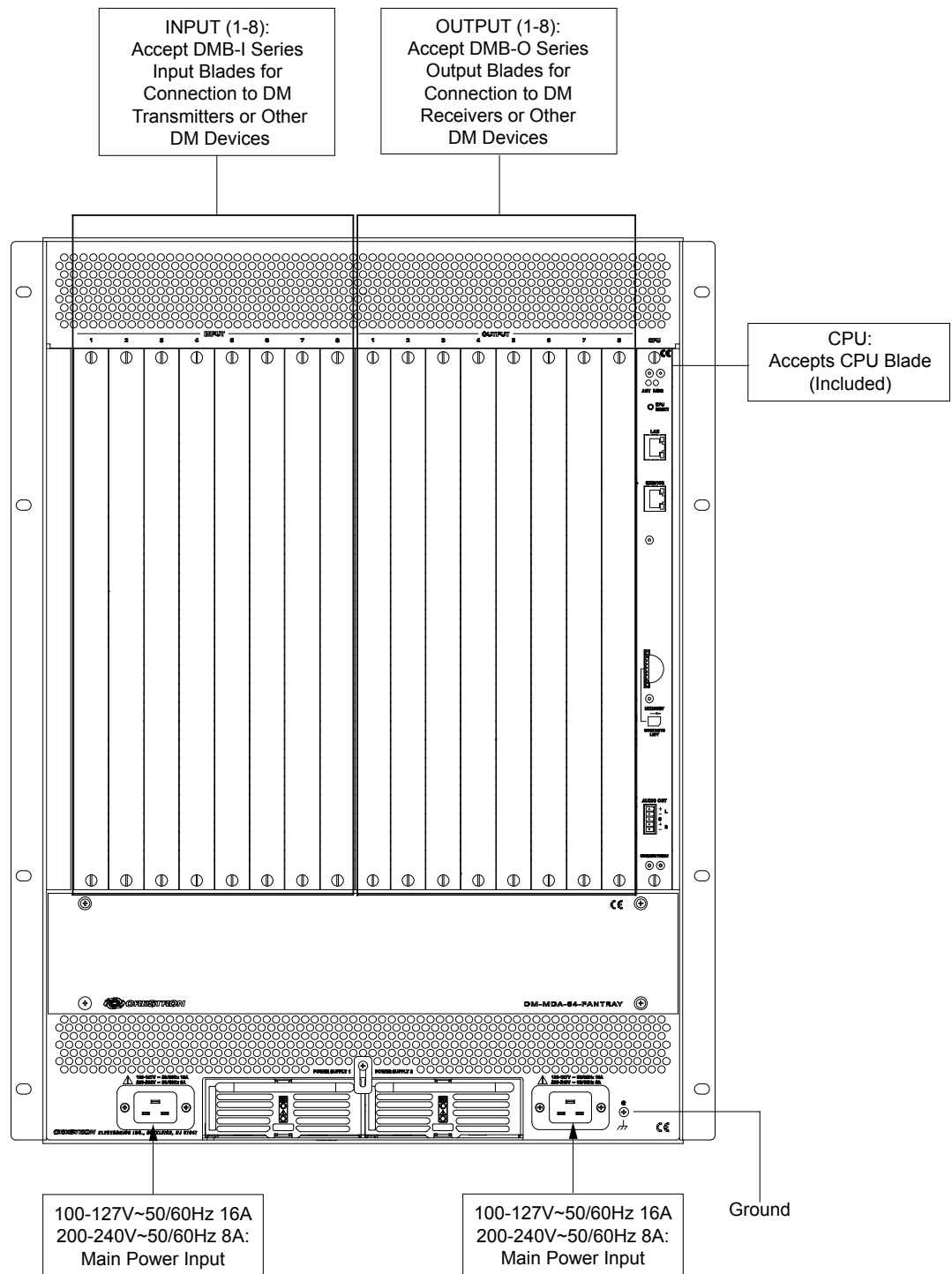
Make the necessary connections as called out in the following illustrations. Refer to “Network Wiring” on page 25. Apply power after all connections have been made.

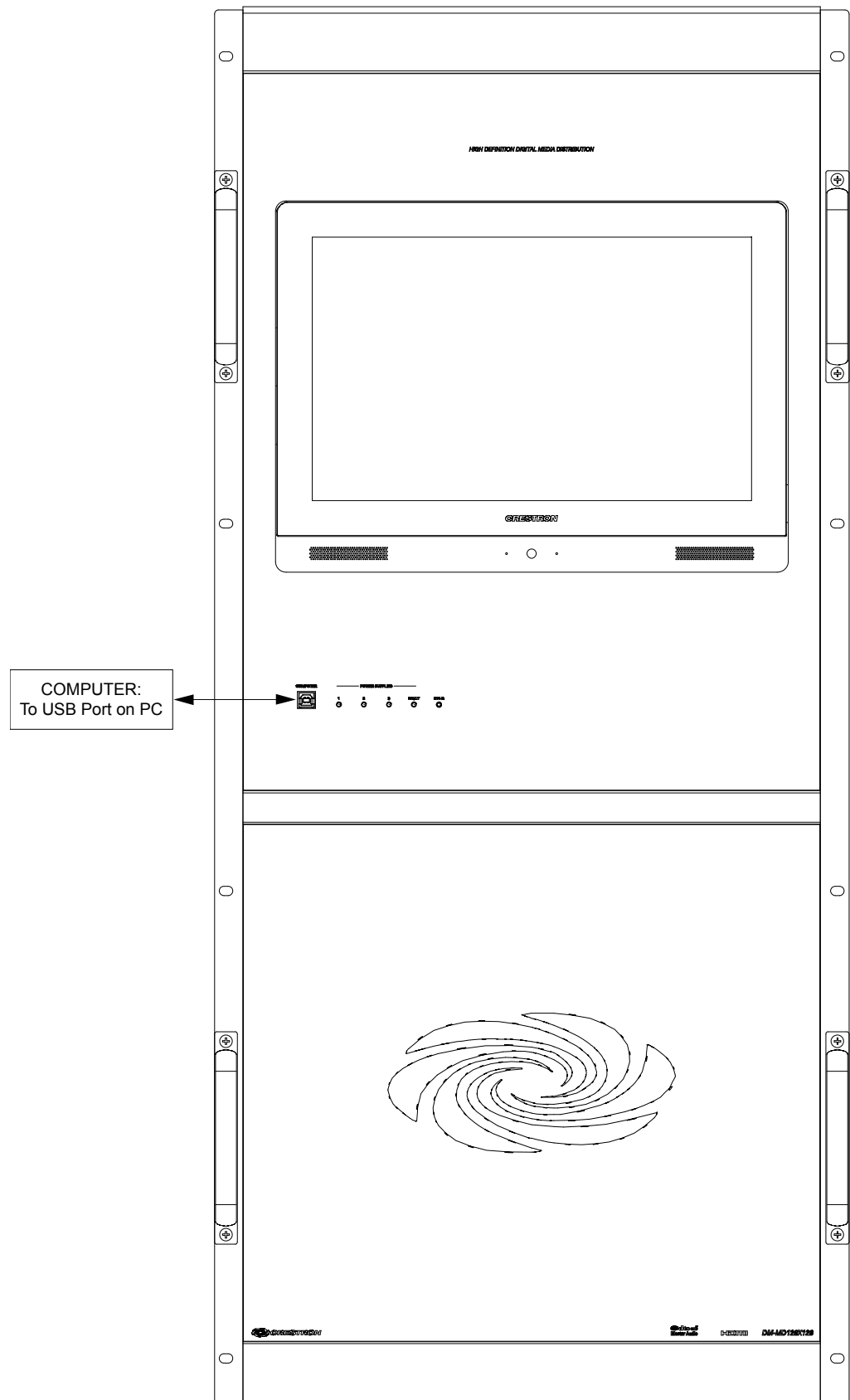
NOTE: Ensure that the unit is properly grounded by connecting the chassis ground lug to an earth ground (building steel).

NOTE: To prevent overheating, do not operate this product in an area that exceeds the environmental temperature range listed in the table of specifications.

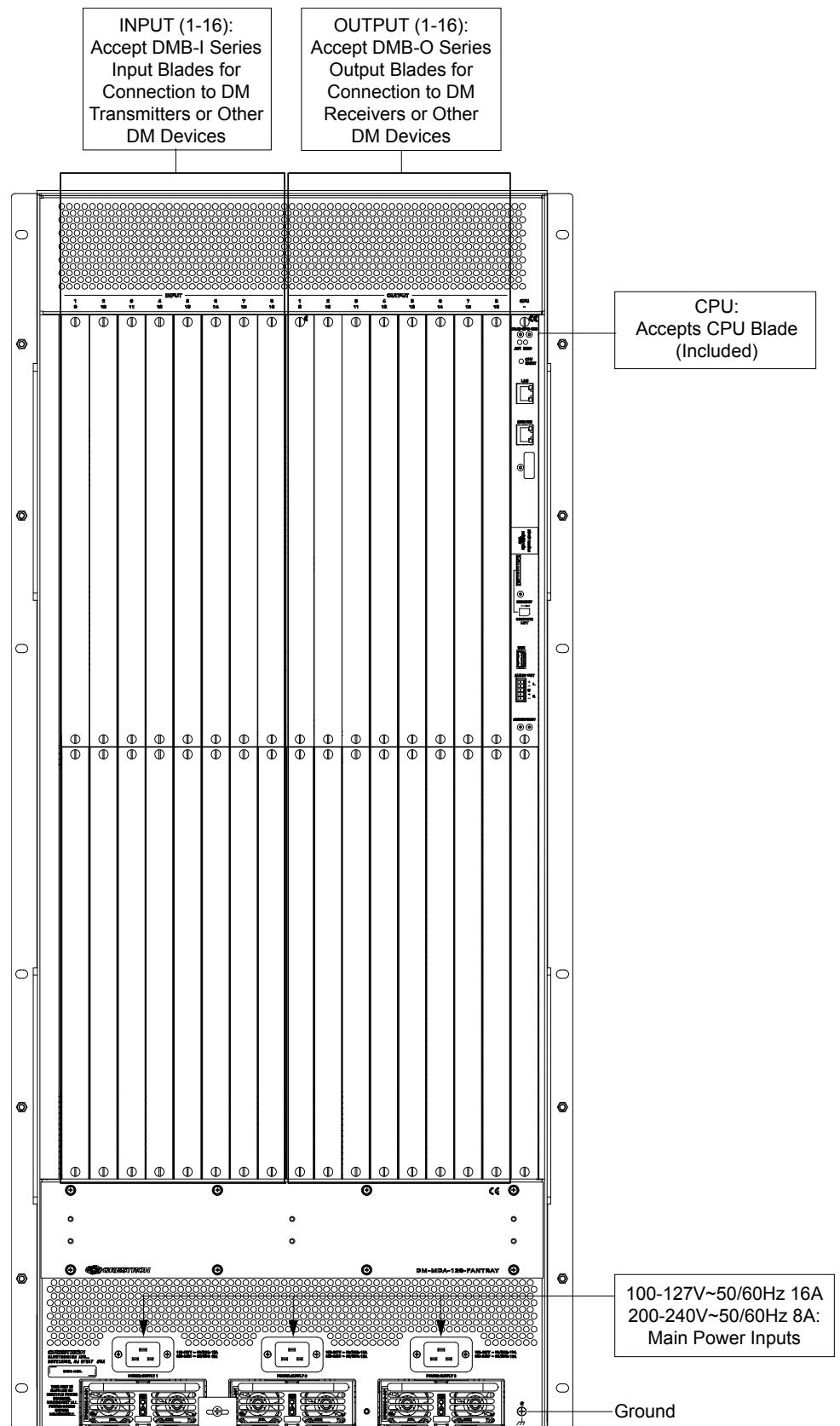
Hardware Connections for the DM-MD64X64 (Front)

Hardware Connections for the DM-MD64X64 (Rear)



Hardware Connections for the DM-MD128X128 (Front)

Hardware Connections for the DM-MD128X128 (Rear)



User Interface Overview

The DM switcher provides a user interface that allows various functions to be performed. Some of the available capabilities provided by the user interface are as follows:

- Routing of video and audio inputs to outputs
- Configuration of Ethernet settings
- Password control
- Firmware upgrade
- Monitoring of blade status

The DM switcher user interface can be accessed from the front panel touch screen or from a web browser. The front panel touch screen appears after the DM switcher boots up.

To access the DM switcher from a web browser, go to the IP address or host name of the switcher. The default host name is **DM-64x64-XXXXXX** for the DM-MD64X64 and **D128x128-XXXXXX** for the DM-MD128X128 (**XXXXXX** represents the last six hexadecimal digits of the MAC address of the switcher, for example, DM-64x64-33956F or D128x128-33956F).

Uploading and Upgrading


Crestron recommends using the latest programming software and that each device contains the latest firmware to take advantage of the most recently released features.

NOTE: Crestron software and any files on the website are for authorized Crestron dealers and Crestron Service Providers (CSPs) only. New users must register to obtain access to certain areas of the site (including the FTP site).

Firmware can be loaded to the DM switcher using an FTP (File Transfer Protocol) client on a PC or an SD™ card. The DM-MD128X128 also provides the capability of loading firmware using a USB flash drive.

Using an FTP Client

To upgrade firmware using an FTP client on a PC, do the following:

1. Remove the SD card from the **MEMORY** slot of the DMB CPU blade of the DM switcher.
2. Download the latest firmware file from the Crestron website to the PC. The firmware file is named **dm-md64x64_X.XXX.XXXX.zip** for the DM-MD64X64 and **dm-md128x128_X.XXX.XXXX.zip** for the DM-MD128X128 (X.XXX.XXXX represents the version number, for example, dm-md64x64_1.001.0019.zip or dm-md128x128_1.001.0019.zip).
3. Using the FTP client, connect to the DM switcher by entering the IP address of the switcher.
4. Locate the *UPDATES* folder.
5. Upload the firmware file to the *UPDATES* folder.
6. Using either the front panel touch screen or a web browser, do the following:
 - a. On the main screen of the DM switcher, select . The “Selection Menu” screen appears.
 - b. Select *Firmware*. The “Firmware Setup” screen appears.
 - c. Select *Update*.

Using an SD Card or USB Flash Drive


NOTE: The SD card must be a minimum of 2 GB. A 2 GB SD card is included with the DM switcher. An SDHC™ card can also be used.

NOTE: Upgrading firmware using a USB flash drive is applicable to the DM-MD128X128 only.

To upgrade firmware using an SD card or a USB flash drive, do the following:

1. Remove the SD card from the **MEMORY** slot of the DMB CPU blade of the DM switcher, and insert the card into the SD card slot of a PC.

NOTE: If a USB flash drive is to be used to upgrade firmware of the DM-MD128X128, insert the USB flash drive into the USB port of a PC.

2. Download the latest firmware file from the Crestron website to the PC. The firmware file is named **dm-md64x64_X.XXX.XXXX.zip** for the DM-MD64X64 and **dm-md128x128_X.XXX.XXXX.zip** for the DM-MD128X128 (X.XXX.XXXX represents the version number, for example, dm-md64x64_1.001.0019.zip or dm-md128x128_1.001.0019.zip).
3. Copy the firmware file to the SD card or USB flash drive—do not copy the file to a subfolder.
4. Insert the SD card into the **MEMORY** slot of the DMB CPU blade, or, if a USB flash drive is being used for the DM-MD128X128, insert the USB flash drive into the **USB** port of the DMB CPU blade.
5. Using either the front panel touch screen or a web browser, do the following:
 - a. On the main screen of the DM switcher, select .
The “Selection Menu” screen appears.
 - b. Select *Firmware*.
The “Firmware Setup” screen appears.
 - c. Select *Update*.

Problem Solving

Troubleshooting

The following table provides corrective action for possible trouble situations. If further assistance is required, please contact a Crestron customer service representative.

DM-MD64X64 and DM-MD128X128 Troubleshooting

TROUBLE	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
Audio or video is distorted.	Source does not match capabilities of destination.	Check EDID capabilities of devices in the system.
Video loss occurs.	Various conditions may cause video loss.	Use the DM switcher user interface to determine cause and correct accordingly.
POWER SUPPLIES 1, 2, or 3 LED on front of unit is not lit.	Power connection is faulty.	Do the following as necessary: <ul style="list-style-type: none"> • Check power connection. • Reseat power supply.¹
POWER SUPPLIES FAULT LED on front of unit flashes red.	A fault exists with a power supply.	Do the following as necessary: <ul style="list-style-type: none"> • Check power connection. • Reseat power supply.¹ If problem persists, replace power supply. ²
OK power supply LED on rear of unit is not lit.	Power connection is faulty.	Do the following as necessary: <ul style="list-style-type: none"> • Check power connection. • Reseat power supply.¹ If problem persists, replace power supply. ²
! power supply LED on rear of unit lights amber.	A fault exists with the power supply due to any of the following conditions: under voltage, over voltage, over temperature, fan failure conditions, or over current protection of standby voltage.	Do the following as necessary: <ul style="list-style-type: none"> • Cycle ac power. • Eliminate cause of failure (for example, under voltage, over voltage, or fan failure) as appropriate. If problem persists, replace power supply. ²
DM link status LED on fiber input/output blade blinks green once a second.	Input/output port cannot establish a link to the connected device.	Check cable connection to the DM switcher and the connected device.

1. Before removing a power supply, disconnect the ac power cord from the corresponding power inlet. Connect the ac power cord to the corresponding power inlet after a power supply is installed.
2. Although the DM-MD64X64 and DM-MD128X128 continue to operate if a single power supply fails, it is recommended that the failed power supply be replaced as soon as possible to restore power supply redundancy.

Reference Documents

All documents mentioned within this guide are available from the Crestron website.

List of Related Reference Documents

DOCUMENT TITLE
Crestron DigitalMedia Design Guide (www.crestron.com/dmresources)
Crestron e-Control Reference Guide (www.crestron.com/manuals)
Crestron IP Considerations Guide for the IT Professional (www.crestron.com/dmresources)

Further Inquiries

To locate specific information or resolve questions after reviewing this guide, contact Crestron's True Blue Support at 1-888-CRESTRON [1-888-273-7876] or, for assistance within a particular geographic region, refer to the listing of Crestron worldwide offices at www.crestron.com/offices.

To post a question about Crestron products, log onto Crestron's Online Help at www.crestron.com/onlinehelp. First-time users must establish a user account to fully benefit from all available features.

Future Updates

As Crestron improves functions, adds new features, and extends the capabilities of the DM-MD64X64 and DM-MD128X128, additional information may be made available as manual updates. These updates are solely electronic and serve as intermediary supplements prior to the release of a complete technical documentation revision.

Check the Crestron website periodically for manual update availability and its relevance. Updates are identified as an "Addendum" in the Download column.

Appendix: DigitalMedia Blades

DigitalMedia blades for the DM switchers consist of the following:

- CPU blade (is shown below)
- Input blades (refer to page 43)
- Output blades (refer to page 58)

CPU Blade

A CPU blade is included with each DM switcher. The DMB-CPU-64 is the CPU blade for the DM-MD64X64; the DMB-CPU-128 is the CPU blade for the DM-MD128X128. Either CPU blade can be purchased separately to provide a backup replacement. Replacement of the CPU blade can be performed on site without requiring any tools and without removing the switcher from the equipment rack. The CPU blade can be replaced in seconds although a system reboot may be required to activate the new blade.

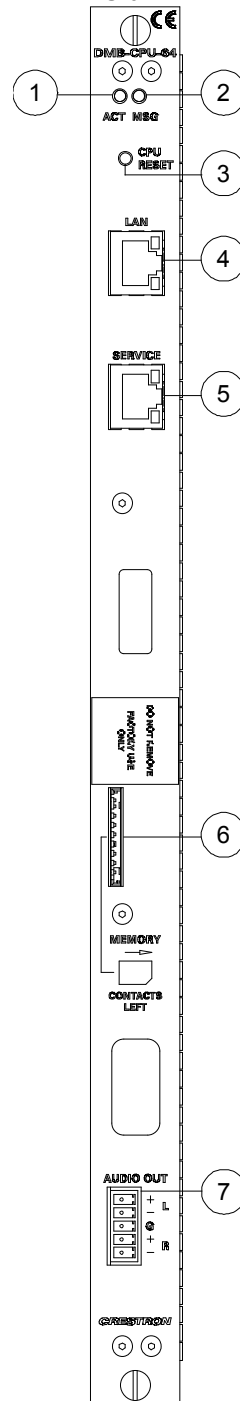
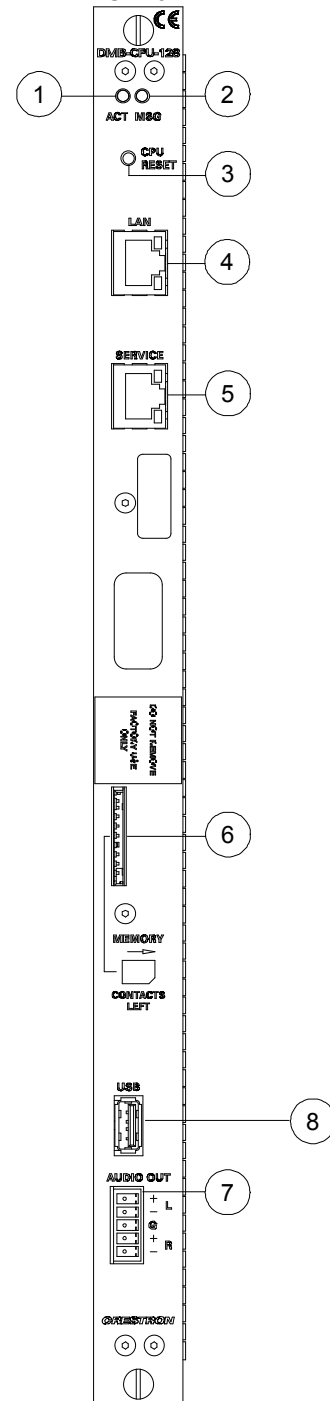
Specifications

Specifications for the CPU blade are listed in the following table.

SPECIFICATION	DETAILS
Construction	Plug-in blade, occupies the CPU blade slot of a DM switcher, includes metal faceplate with black finish
Weight	1.6 lb (726 g)

Physical Description

Connectors, controls, and indicators are shown below.

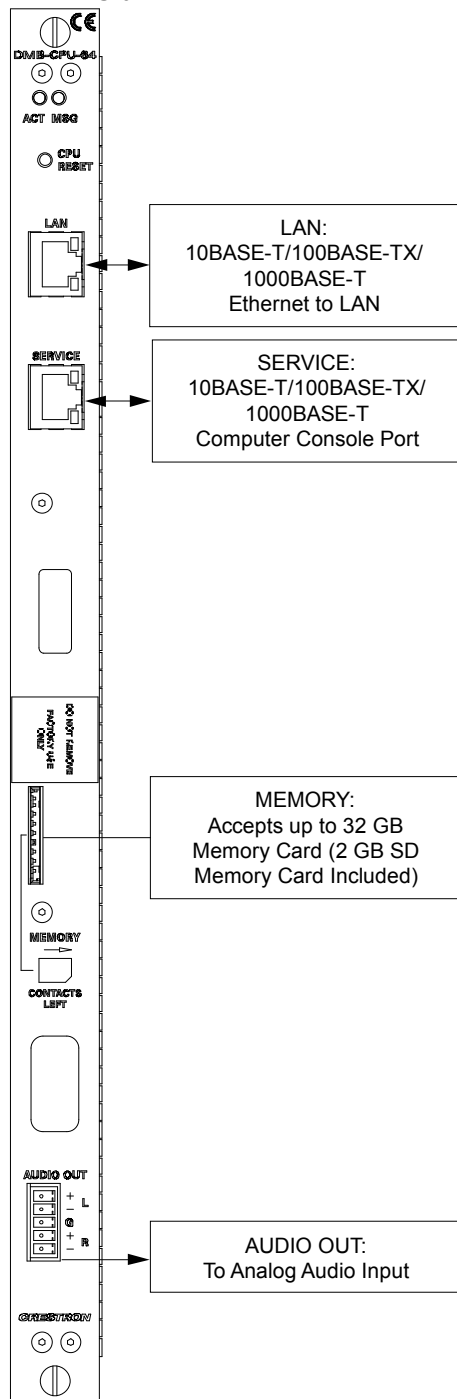
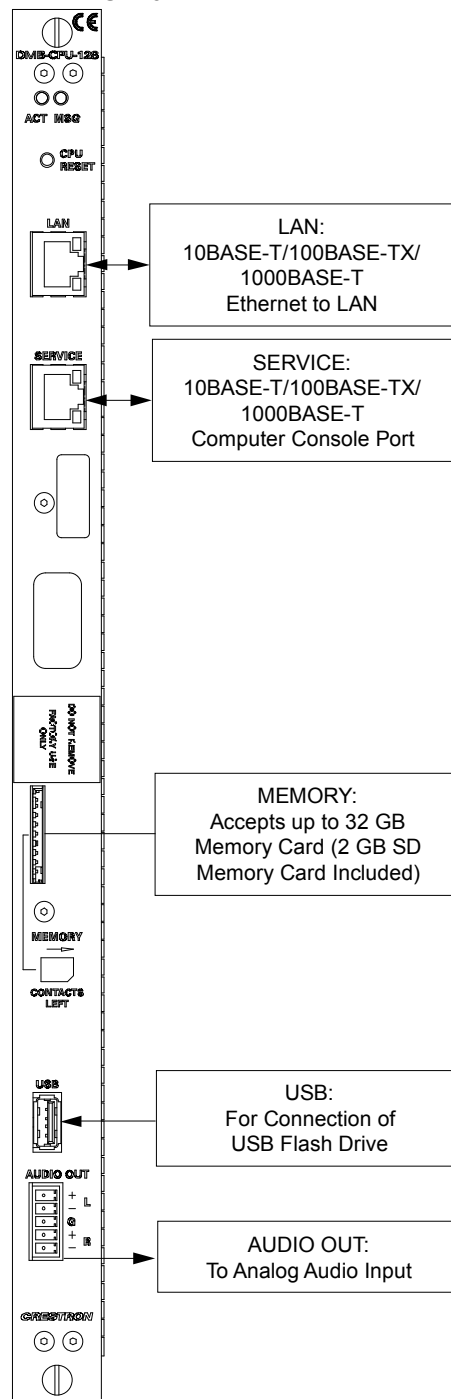
DMB-CPU-64/DMB-CPU-128 Connectors, Controls, and Indicators**DMB-CPU-64****DMB-CPU-128**

Connectors, Controls, and Indicators

#	CONNECTORS, CONTROLS, AND INDICATORS	DESCRIPTION																				
1	ACT LED	(1) Green LED, indicates CPU activity																				
2	MSG LED	(1) Red LED, indicates CPU has generated an error message																				
3	CPU RESET	(1) Recessed miniature push button, reboots the CPU and front panel																				
4	<div>LAN<div><div><div>Pin 8</div><div>Pin 1</div></div><div><div>Amber LED</div><div>Green LED</div></div></div></div>	<div>(1) 8-pin RJ-45 female with two LED indicators; 10BASE-T/100BASE-TX/1000BASE-T Ethernet port; Green LED indicates Ethernet link status; Amber LED indicates Ethernet activity</div> <table><tr><th>PIN</th><th>SIGNAL</th><th>PIN</th><th>SIGNAL</th></tr><tr><td>1</td><td>TX +</td><td>5</td><td>N/C</td></tr><tr><td>2</td><td>TX -</td><td>6</td><td>RX -</td></tr><tr><td>3</td><td>RX +</td><td>7</td><td>N/C</td></tr><tr><td>4</td><td>N/C</td><td>8</td><td>N/C</td></tr></table>	PIN	SIGNAL	PIN	SIGNAL	1	TX +	5	N/C	2	TX -	6	RX -	3	RX +	7	N/C	4	N/C	8	N/C
PIN	SIGNAL	PIN	SIGNAL																			
1	TX +	5	N/C																			
2	TX -	6	RX -																			
3	RX +	7	N/C																			
4	N/C	8	N/C																			
5	<div>SERVICE<div><div><div>Pin 8</div><div>Pin 1</div></div><div><div>Amber LED</div><div>Green LED</div></div></div></div>	<div>(1) 8-pin RJ-45 female with two LED indicators; 10BASE-T/100BASE-TX/1000BASE-T Ethernet port; Green LED indicates Ethernet link status; Amber LED indicates Ethernet activity; Computer console port</div>																				
6	MEMORY	<div>(1) SD memory card slot; Accepts one SD or SDHC card up to 32 GB for memory expansion (2 GB SD card included); For save/load of configuration and EDID settings and for firmware update</div>																				
7	<div>AUDIO OUT<div><div><div><div></div><div></div><div></div><div></div></div><div><div>+</div><div>-</div><div>G</div><div>+</div><div>-</div></div><div><div>L</div><div></div><div></div><div>R</div></div></div></div></div>	<div>(1) 5-pin 3.5 mm detachable terminal block; Balanced/unbalanced stereo line level output; Output Impedance: 200 Ω balanced, 100 Ω unbalanced; Maximum Output Level: 4 Vrms balanced, 2 Vrms unbalanced</div>																				
8	<div>USB<div><div></div></div></div>	<div>(1) USB Type A female; USB 2.0 host port for connection of a USB flash drive; For save/load of configuration and EDID settings and for firmware update</div>																				

Hardware Hookup

Make the necessary connections as called out in the illustration below.

Hardware Connections for the DMB-CPU-64/DMB-CPU-128**DMB-CPU-64****DMB-CPU-128**

Input Blades

DigitalMedia input blades for the DM switchers include the following:

- DMB-4K-I-HD, 8-channel 4K HDMI input blade (is shown below)
- DMB-I-S, 8-channel DigitalMedia 8G fiber input blade (refer to page 48)
- DMB-I-S2, 8-channel DigitalMedia 8G single-mode fiber input blade (refer to page 53)

DMB-4K-I-HD

The DMB-4K-I-HD is an input blade that provides eight HDMI inputs. Each HDMI input supports Full HD 1080p, Ultra HD, 2K, and 4K video signals with HDCP, Deep Color, 3D, and high-bitrate HD multichannel audio. Stereo analog audio inputs can also be added using the optional AUD-BOB-1602 analog audio breakout box (future product, sold separately).

Specifications

Specifications for the DMB-4K-I-HD are listed in the following table.

DMB-4K-I-HD Specifications

SPECIFICATION	DETAILS
Video	
Input Signal Type	HDMI, DVI ¹ , DisplayPort Multimode ¹
Formats	HDMI with Deep Color, 3D, and 4K; HDCP content protection support
Input Resolutions	
Progressive	640 x 480 @ 60 Hz 720 x 480 @ 60 Hz (480p) 720 x 576 @ 50 Hz (576p) 800 x 600 @ 60 Hz 848 x 480 @ 60 Hz 852 x 480 @ 60 Hz 854 x 480 @ 60 Hz 1024 x 768 @ 60 Hz 1024 x 852 @ 60 Hz 1024 x 1024 @ 60 Hz 1280 x 720 @ 50 Hz (720p50) 1280 x 720 @ 60 Hz (720p60) 1280 x 768 @ 60 Hz 1280 x 800 @ 60 Hz 1280 x 960 @ 60 Hz 1280 x 1024 @ 60 Hz 1360 x 768 @ 60 Hz 1365 x 1024 @ 60 Hz 1366 x 768 @ 60 Hz 1400 x 1050 @ 60 Hz 1440 x 900 @ 60 Hz 1600 x 900 @ 60 Hz 1600 x 1200 @ 60 Hz 1680 x 1050 @ 60 Hz 1920 x 1080 @ 24 Hz (1080p24) 1920 x 1080 @ 25 Hz (1080p25) 1920 x 1080 @ 50 Hz (1080p50) 1920 x 1080 @ 60 Hz (1080p60) 1920 x 1200 @ 60 Hz

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DMB-4K-I-HD Specifications (Continued)

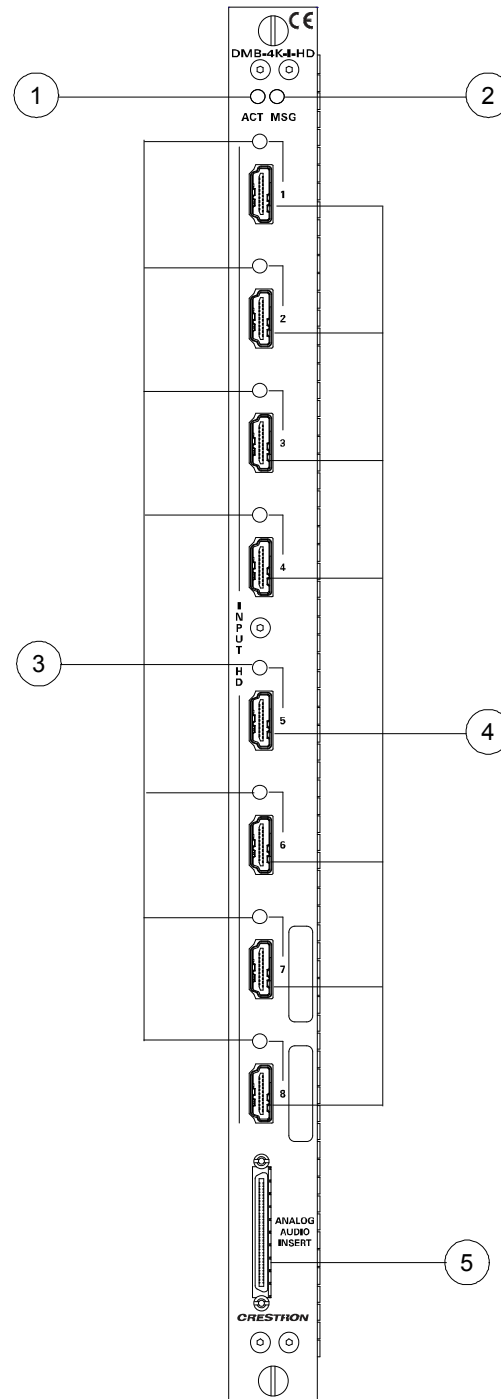
SPECIFICATION	DETAILS
Video	
Input Resolutions	
Progressive (Continued)	2048 x 1080 @ 24 Hz 2048 x 1152 @ 60 Hz 2560 x 1440 @ 60 Hz 2560 x 1600 @ 60 Hz 3840 x 2160 @ 24 Hz 3840 x 2160 @ 25 Hz 3840 x 2160 @ 30 Hz 3840 x 2160 @ 50 Hz ² 3840 x 2160 @ 60 Hz ² 4096 x 2160 @ 24 Hz 4096 x 2160 @ 50 Hz ² 4096 x 2160 @ 60 Hz ² plus any other resolution allowed by HDMI up to 300 MHz pixel clock
Interlaced	720 x 480 @ 30 Hz (480i) 720 x 576 @ 25 Hz (576i) 1920 x 1080 @ 25 Hz (1080i25) 1920 x 1080 @ 30 Hz (1080i30) plus any other resolution allowed by HDMI up to 300 MHz pixel clock
Audio	
Input Signal Types	HDMI, DisplayPort Multimode, ¹ analog stereo ³
Formats	
HDMI	Dolby Digital, Dolby Digital EX, Dolby Digital Plus, Dolby TrueHD, DTS, DTS-ES, DTS 96/24, DTS-HD High Res, DTS-HD Master Audio, up to 8-channel PCM
Analog	Stereo 2-channel
Analog-to-Digital Conversion	24-bit 48 kHz
Performance (Analog)	
Frequency Response	20 Hz to 20 kHz ± 0.5 dB
S/N Ratio	>95 dB, 20 Hz to 20 kHz A-weighted
THD + N	<0.005% @ 1 kHz
Stereo Separation	>80 dB
Input Compensation (Analog)	± 10 dB
Construction	Plug-in blade, occupies (1) DM switcher input blade slot, includes metal faceplate with black finish
Weight	1.6 lb (726 g)
Available Accessories	
AUD-BOB-1602	16-Channel Analog Audio Breakout Box
CBL Series	Crestron Certified Interface Cables

1. HDMI requires an appropriate adapter or interface cable to accommodate a DVI or DisplayPort Multimode signal. CBL-HD-DVI interface cables sold separately.
2. 4K support at 50/60 Hz with 4:2:0 color sampling will be enabled through a future firmware update.
3. Analog stereo audio input requires the optional AUD-BOB-1602 analog audio breakout box (future product, sold separately).


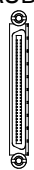
Physical Description

Connectors, controls, and indicators are shown below.

DMB-4K-I-HD Connectors, Controls, and Indicators



Connectors, Controls, and Indicators

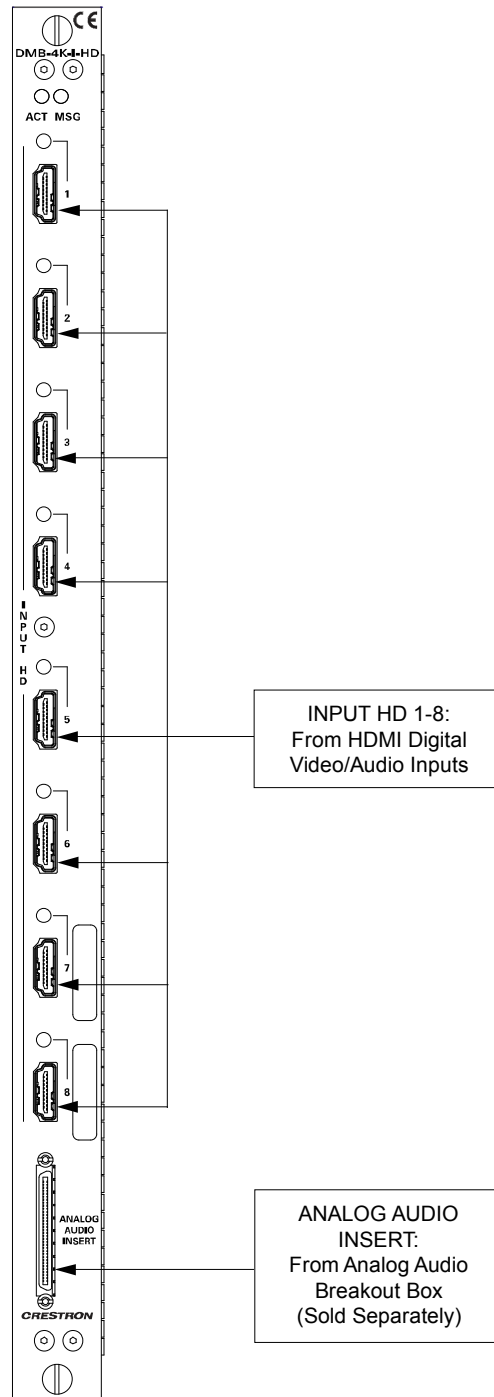
#	CONNECTORS, CONTROLS, AND INDICATORS	DESCRIPTION
1	ACT LED	(1) Green LED, indicates blade activity
2	MSG LED	(1) Red LED, indicates an error message has been generated
3	INPUT HD 1-8 LEDs	(8) Dual-color red/green LEDs, indicate video lock and HDCP status for each corresponding input
4	INPUT HD 1-8 	(8) 19-pin Type A HDMI female; HDMI digital video/audio inputs; Also support DVI and DisplayPort Multimode*
5	ANALOG AUDIO INSERT 	(1) 68-pin VHDCI female; Connects to AUD-BOB-1602 external analog audio breakout box (future product, sold separately)

* HDMI requires an appropriate adapter or interface cable to accommodate a DVI or DisplayPort Multimode signal. CBL-HD-DVI interface cables sold separately.

Hardware Hookup

Make the necessary connections as called out in the illustration below.

Hardware Connections for the DMB-4K-I-HD



DMB-I-S

The DMB-I-S is an input blade that provides eight DM 8G fiber inputs. Each DM 8G fiber input enables the connection of a DM 8G fiber transmitter or the output of another DM switcher. One multimode fiber optic strand is required per input, each supporting distances up to 1000 feet (300 meters) using CresFiber® 8G multimode fiber optic cable.*

Specifications

Specifications for the DMB-I-S are listed in the following table.

DMB-I-S Specifications

SPECIFICATION	DETAILS
Video	
Input Signal Type	DM 8G fiber (DigitalMedia over one multimode fiber optic strand)*
Formats	DM 8G with Deep Color and 3D, HDCP content protection support
Input Resolutions	
Progressive	640 x 480 @ 60 Hz 720 x 480 @ 60 Hz (480p) 720 x 576 @ 50 Hz (576p) 800 x 600 @ 60 Hz 848 x 480 @ 60 Hz 852 x 480 @ 60 Hz 854 x 480 @ 60 Hz 1024 x 768 @ 60 Hz 1024 x 852 @ 60 Hz 1024 x 1024 @ 60 Hz 1280 x 720 @ 50 Hz (720p50) 1280 x 720 @ 60 Hz (720p60) 1280 x 768 @ 60 Hz 1280 x 800 @ 60 Hz 1280 x 960 @ 60 Hz 1280 x 1024 @ 60 Hz 1360 x 768 @ 60 Hz 1365 x 1024 @ 60 Hz 1366 x 768 @ 60 Hz 1400 x 1050 @ 60 Hz 1440 x 900 @ 60 Hz 1600 x 900 @ 60 Hz 1600 x 1200 @ 60 Hz 1680 x 1050 @ 60 Hz 1920 x 1080 @ 24 Hz (1080p24) 1920 x 1080 @ 25 Hz (1080p25) 1920 x 1080 @ 50 Hz (1080p50) 1920 x 1080 @ 60 Hz (1080p60) 1920 x 1200 @ 60 Hz 2048 x 1080 @ 24 Hz 2048 x 1152 @ 60 Hz plus any other resolution allowed by HDMI up to 165 MHz pixel clock

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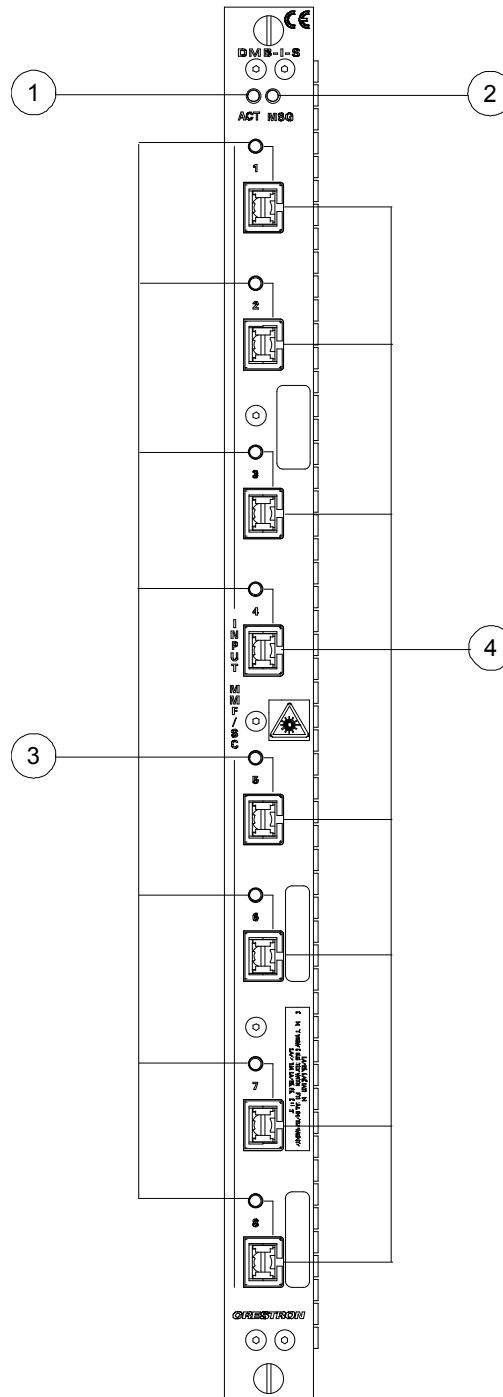
* The maximum DigitalMedia 8G fiber (DM 8G fiber) cable length is 1000 feet (300 meters) using CRESFIBER8G fiber optic cable or 500 feet (150 meters) using standard CRESFIBER, CRESFIBER-SINGLE-SC, or third-party OM3 simplex multimode fiber optic cable.

DMB-I-S Specifications (Continued)

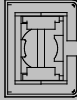
SPECIFICATION	DETAILS
Video Input Resolutions (Continued) Interlaced	720 x 480 @ 30 Hz (480i) 720 x 576 @ 25 Hz (576i) 1920 x 1080 @ 25 Hz (1080i25) 1920 x 1080 @ 30 Hz (1080i30) plus any other resolution allowed by HDMI up to 165 MHz pixel clock
Audio Input Signal Type Formats	DM 8G fiber Dolby Digital, Dolby Digital EX, Dolby Digital Plus, Dolby TrueHD, DTS, DTS-ES, DTS 96/24, DTS-HD High Res, DTS-HD Master Audio, up to 8-channel PCM
Construction	Plug-in blade, occupies (1) DM switcher input blade slot, includes metal faceplate with black finish
Weight	1.6 lb (726 g)
Available Accessories CRESFIBER-CONN- SC50UM-12 CRESFIBER-SINGLE-SC CRESFIBER-SINGLE-SC- ARMORED CRESFIBER-SINGLE-SC- CLEAR CRESFIBER-TK CRESFIBER8G	CresFiber Fiber Optic Cable Connector CresFiber Simplex Fiber Optic Cable Assembly, 50/125, SC CresFiber ARMORED Simplex Fiber Optic Cable Assembly, 50/125, SC CresFiber CLEAR Simplex Fiber Optic Cable Assembly, 50/125, SC CresFiber Termination Kit CresFiber 8G Multimode Fiber Optic Cable

Physical Description

Connectors and indicators are shown below.

DMB-I-S Connectors and Indicators

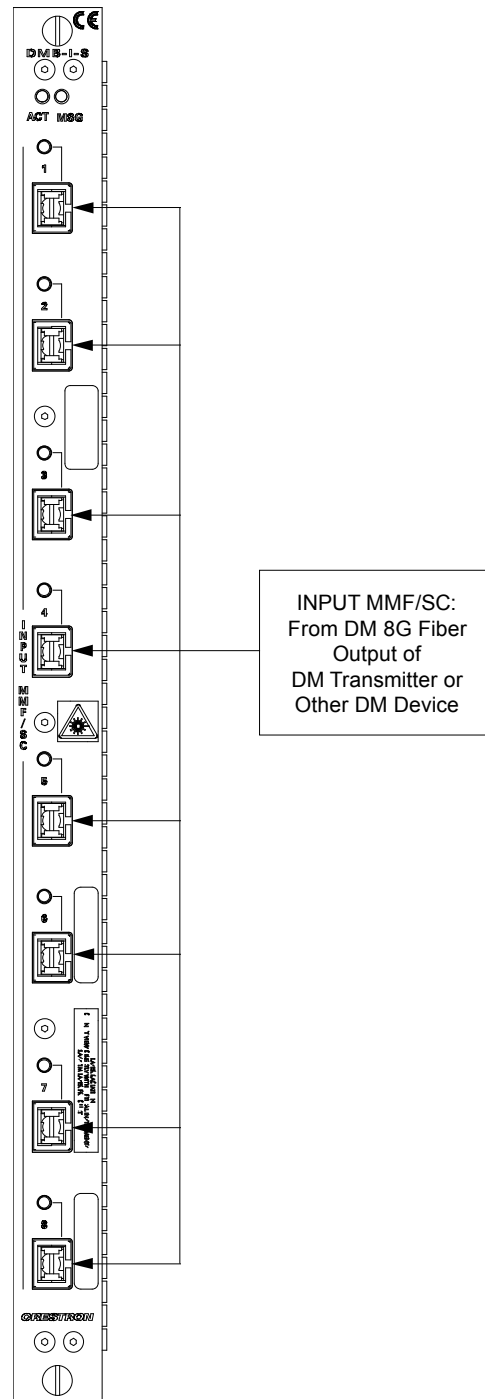
Connectors and Indicators

#	CONNECTORS AND INDICATORS	DESCRIPTION
1	ACT LED	(1) Green LED, indicates blade activity
2	MSG LED	(1) Red LED, indicates an error message has been generated
3	INPUT MMF/SC LEDs	(8) Green LEDs, indicate DM link status for each corresponding input
4	INPUT MMF/SC 1-8 	(8) SC female optical fiber connectors; DM 8G fiber inputs; Each connects to the DM 8G fiber output of a DM transmitter or other DM device via CRESFIBER8G multimode fiber optic cable*

* The maximum DigitalMedia 8G fiber (DM 8G fiber) cable length is 1000 feet (300 meters) using CRESFIBER8G fiber optic cable or 500 feet (150 meters) using standard CRESFIBER, CRESFIBER-SINGLE-SC, or third-party OM3 simplex multimode fiber optic cable.

Hardware Hookup

Make the necessary connections as called out in the illustration below.

Hardware Connections for the DMB-I-S

NOTE: Fiber optic cable connectors and cable ends should be protected from contamination and scratching at all times. When cable is not connected, protect the optical transceivers on the DMB-I-S by using the included caps. Fiber ends should be handled carefully and the cable should not be bent or coiled tightly.

DMB-I-S2

The DMB-I-S2 is an input blade that provides eight DM 8G SM fiber inputs. Each DM 8G SM fiber input enables the connection of a DM 8G SM fiber transmitter or the output of another DM switcher. One single-mode fiber optic strand is required per input, each supporting distances up to 7.5 miles (12 km) using CresFiber 8G SM or G.652.D single-mode fiber.*

Specifications

Specifications for the DMB-I-S2 are listed in the following table.

DMB-I-S2 Specifications

SPECIFICATION	DETAILS
Video	
Input Signal Type	DM 8G SMF (DigitalMedia over one single-mode fiber optic strand)*
Formats	DM 8G with Deep Color and 3D, HDCP content protection support
Input Resolutions	
Progressive	640 x 480 @ 60 Hz 720 x 480 @ 60 Hz (480p) 720 x 576 @ 50 Hz (576p) 800 x 600 @ 60 Hz 848 x 480 @ 60 Hz 852 x 480 @ 60 Hz 854 x 480 @ 60 Hz 1024 x 768 @ 60 Hz 1024 x 852 @ 60 Hz 1024 x 1024 @ 60 Hz 1280 x 720 @ 50 Hz (720p50) 1280 x 720 @ 60 Hz (720p60) 1280 x 768 @ 60 Hz 1280 x 800 @ 60 Hz 1280 x 960 @ 60 Hz 1280 x 1024 @ 60 Hz 1360 x 768 @ 60 Hz 1365 x 1024 @ 60 Hz 1366 x 768 @ 60 Hz 1400 x 1050 @ 60 Hz 1440 x 900 @ 60 Hz 1600 x 900 @ 60 Hz 1600 x 1200 @ 60 Hz 1680 x 1050 @ 60 Hz 1920 x 1080 @ 24 Hz (1080p24) 1920 x 1080 @ 25 Hz (1080p25) 1920 x 1080 @ 50 Hz (1080p50) 1920 x 1080 @ 60 Hz (1080p60) 1920 x 1200 @ 60 Hz 2048 x 1080 @ 24 Hz 2048 x 1152 @ 60 Hz plus any other resolution allowed by HDMI up to 165 MHz pixel clock

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* The maximum DigitalMedia 8G single-mode fiber (DM 8G SM fiber) cable length is 7.5 miles (12 km) using CRESFIBER8G-SM or third-party G.652.D (or better) single-mode fiber optic cable.

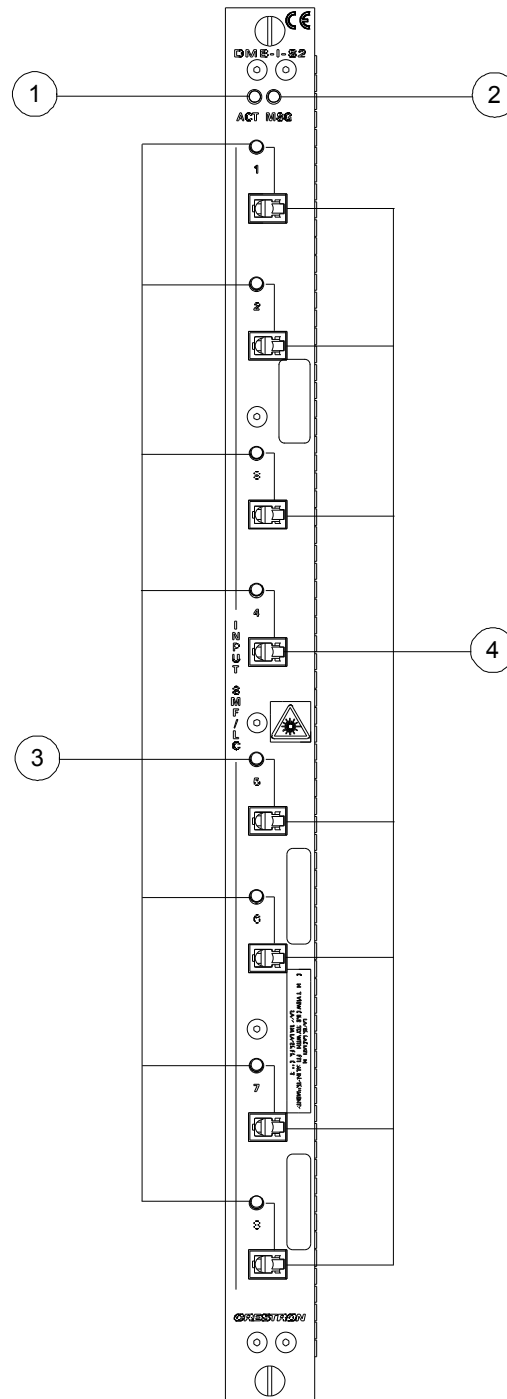
DMB-I-S2 Specifications (Continued)

SPECIFICATION	DETAILS
Video Input Resolutions Interlaced	720 x 480 @ 30 Hz (480i) 720 x 576 @ 25 Hz (576i) 1920 x 1080 @ 25 Hz (1080i25) 1920 x 1080 @ 30 Hz (1080i30) plus any other resolution allowed by HDMI up to 165 MHz pixel clock
Audio Input Signal Type Formats	DM 8G SMF Dolby Digital, Dolby Digital EX, Dolby Digital Plus, Dolby TrueHD, DTS, DTS-ES, DTS 96/24, DTS-HD High Res, DTS-HD Master Audio, up to 8-channel PCM
Construction	Plug-in blade, occupies (1) DM switcher input blade slot, includes metal faceplate with black finish
Weight	1.6 lb (726 g)
Available Accessories CRESFIBER-SM-CONN-LC- 12 CRESFIBER-TK CRESFIBER8G-SM	CresFiber Single-Mode Fiber Optic Cable Connectors CresFiber Termination Kit CresFiber 8G Single-Mode Fiber Optic Cable


Physical Description

Connectors and indicators are shown below.

DMB-I-S2 Connectors and Indicators



Connectors and Indicators

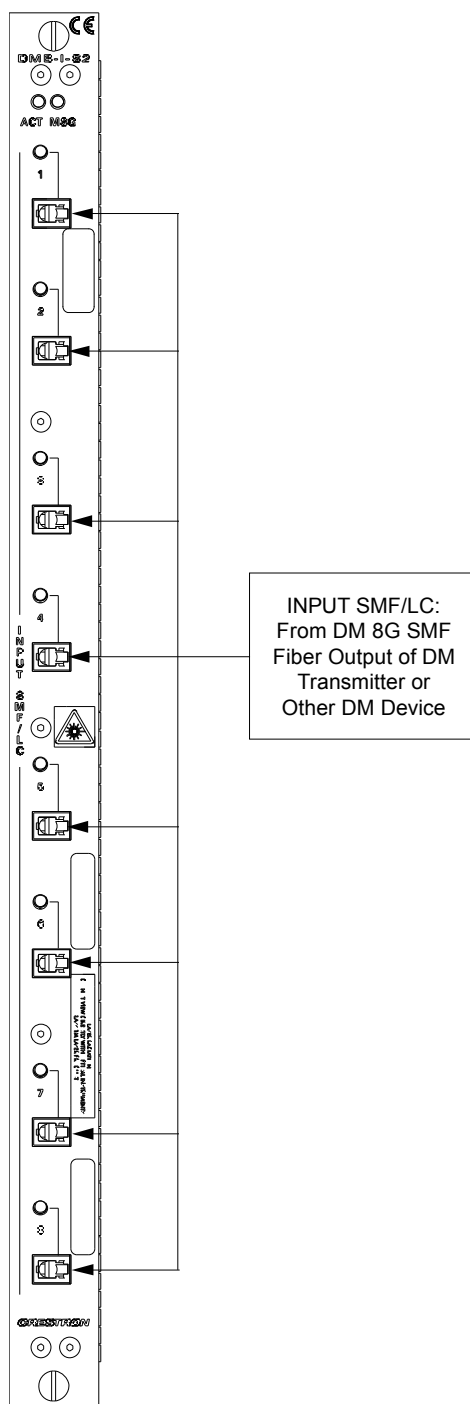
#	CONNECTORS AND INDICATORS	DESCRIPTION
1	ACT LED	(1) Green LED, indicates blade activity
2	MSG LED	(1) Red LED, indicates an error message has been generated
3	INPUT SMF/LC LEDs	(8) Green LEDs, indicate DM link status for each corresponding input
4	INPUT SMF/LC 1-8 	(8) LC female optical fiber connectors; DM 8G single-mode fiber inputs; Each connects to the DM 8G SMF output of a DM transmitter or other DM device via CRESFIBER8G-SM single-mode fiber optic cable*

* The maximum DigitalMedia 8G single-mode fiber (DM 8G SM fiber) cable length is 7.5 miles (12 km) using CRESFIBER8G-SM or third-party G.652.D (or better) single-mode fiber optic cable.

Hardware Hookup

Make the necessary connections as called out in the illustration below.

Hardware Connections for the DMB-I-S2



NOTE: Fiber optic cable connectors and cable ends should be protected from contamination and scratching at all times. When cable is not connected, protect the optical transceivers on the DMB-I-S2 by using the included caps. Fiber ends should be handled carefully and the cable should not be bent or coiled tightly.

Output Blades

DigitalMedia output blades for the DM switchers include the following:

- DMB-4K-O-C, 8-channel DigitalMedia 8G+ output blade (is shown below)
- DMB-O-S, 8-channel DigitalMedia 8G fiber output blade (refer to page 64)
- DMB-O-S2, 8-channel DigitalMedia 8G single-mode fiber output blade (refer to page 69)

DMB-4K-O-C

The DMB-4K-O-C is an output blade that provides eight DM 8G+ outputs. Each DM 8G+ output enables connection to a DM 8G+ receiver, to the input of another DM switcher, or directly to any HDBaseT certified display device or receiver. Just one CAT5e wire is required per output, supporting distances up to 330 feet (100 meters).¹ Power over DM (PoDM) is supplied over the same CAT5e connection, providing a centralized power source for compatible receivers.²

Using DM 8G+ technology, the DMB-4K-O-C provides support for the transport of 4K Ultra HD video signals.

Specifications

Specifications for the DMB-4K-O-C are listed in the following table.

DMB-4K-O-C Specifications

SPECIFICATION	DETAILS
Video	
Output Signal Types	DM 8G+ (DigitalMedia over one CAT5e twisted pair copper wire), HDBaseT
Formats	DM 8G+ with Deep Color, 3D, and 4K; HDCP content protection support
Output Resolutions	
Progressive	640 x 480 @ 60 Hz 720 x 480 @ 60 Hz (480p) 720 x 576 @ 50 Hz (576p) 800 x 600 @ 60 Hz 848 x 480 @ 60 Hz 852 x 480 @ 60 Hz 854 x 480 @ 60 Hz 1024 x 768 @ 60 Hz 1024 x 852 @ 60 Hz 1024 x 1024 @ 60 Hz 1280 x 720 @ 50 Hz (720p50) 1280 x 720 @ 60 Hz (720p60)

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1. The maximum cable length for DigitalMedia 8G+ (DM 8G+) or HDBaseT is 330 feet (100 meters) for resolutions up to 1600 x 1200 and 1920 x 1200 (including 1080p60 and 2K) using DM-CBL-8G DigitalMedia 8G cable, DM-CBL DigitalMedia cable, DM-CBL-D DigitalMedia D cable, or third-party CAT5e (or better) UTP or STP. For higher resolutions (including 4K), the maximum wire length is 230 feet (70 meters) using DM-CBL-8G, or 165 feet (50 meters) using DM-CBL, DM-CBL-D, or CAT5e. Shielded cable and connectors are recommended to safeguard against unpredictable environmental electrical noise which may impact performance at resolutions above 1080p. Refer to the Crestron DigitalMedia Design Guide (Doc. 4546) for complete system design guidelines. DM 8G+ is compatible with HDBaseT Alliance specifications for connecting to HDBaseT compliant equipment. All wire and cables sold separately.
2. Supplying Power over DM (PoDM) or Power over HDBaseT (PoH) via a DM 8G+ output requires PW-4830DUS external power pack (sold separately).

DMB-4K-O-C Specifications (Continued)

SPECIFICATION	DETAILS
Video	
Input Resolutions	
Progressive (Continued)	1280 x 768 @ 60 Hz 1280 x 800 @ 60 Hz 1280 x 960 @ 60 Hz 1280 x 1024 @ 60 Hz 1360 x 768 @ 60 Hz 1365 x 1024 @ 60 Hz 1366 x 768 @ 60 Hz 1400 x 1050 @ 60 Hz 1440 x 900 @ 60 Hz 1600 x 900 @ 60 Hz 1600 x 1200 @ 60 Hz 1680 x 1050 @ 60 Hz 1920 x 1080 @ 24 Hz (1080p24) 1920 x 1080 @ 25 Hz (1080p25) 1920 x 1080 @ 50 Hz (1080p50) 1920 x 1080 @ 60 Hz (1080p60) 1920 x 1200 @ 60 Hz 2048 x 1080 @ 24 Hz 2048 x 1152 @ 60 Hz 2560 x 1440 @ 60 Hz 2560 x 1600 @ 60 Hz 3840 x 2160 @ 24 Hz 3840 x 2160 @ 25 Hz 3840 x 2160 @ 30 Hz 4096 x 2160 @ 24 Hz plus any other resolution allowed by HDMI up to 300 MHz pixel clock
Interlaced	720 x 480 @ 30 Hz (480i) 720 x 576 @ 25 Hz (576i) 1920 x 1080 @ 25 Hz (1080i25) 1920 x 1080 @ 30 Hz (1080i30) plus any other resolution allowed by HDMI up to 300 MHz pixel clock
Audio	
Input Signal Types	DM 8G+, HDBaseT
Formats	Dolby Digital, Dolby Digital EX, Dolby Digital Plus, Dolby TrueHD, DTS, DTS-ES, DTS 96/24, DTS-HD High Res, DTS-HD Master Audio, up to 8-channel PCM
Construction	Plug-in blade, occupies (1) DM switcher output blade slot, includes metal faceplate with black finish
Weight	1.6 lb (726 g)

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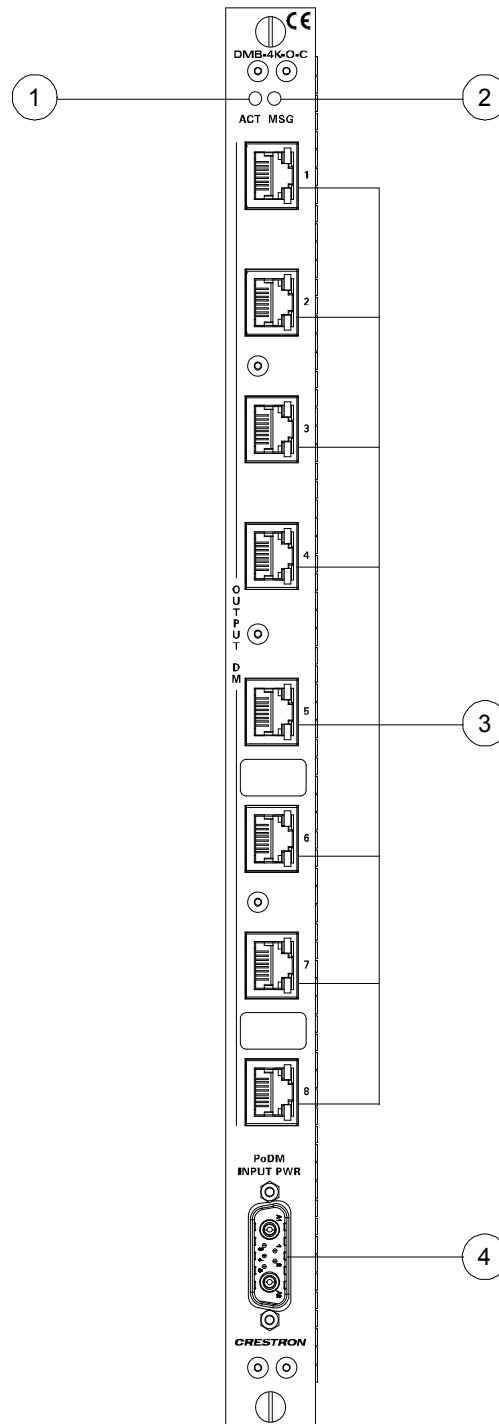
DMB-4K-O-C Specifications (Continued)

SPECIFICATION	DETAILS
Available Accessories	
DM-8G-CONN	DigitalMedia 8G Cable Connectors
DM-8G-CONN-WG	DigitalMedia 8G Cable Connector with Wire Guide
DM-8G-CRIMP	Crimping Tool for DM-8G-CONN
DM-8G-CRIMP-WG	Crimping Tool for DM-8G-CONN-WG
DM-CBL-8G	DigitalMedia 8G Cable
PW-4830DUS	150 W Power Pack for PoDM

Physical Description

Connectors and indicators are shown below.

DMB-4K-Q-C Connectors and Indicators



Connectors and Indicators

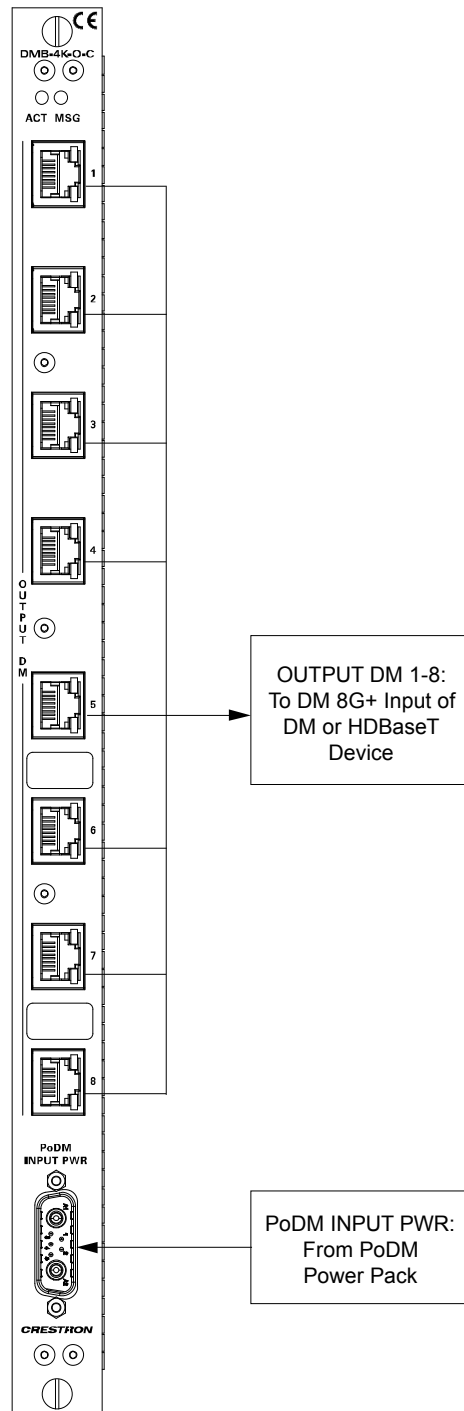
#	CONNECTORS, CONTROLS, AND INDICATORS	DESCRIPTION
1	ACT LED	(1) Green LED, indicates blade activity
2	MSG LED	(1) Red LED, indicates an error message has been generated
3	OUTPUT DM 1-8	(8) 8-pin RJ-45 female, shielded; DM 8G+ outputs, HDBaseT compliant; PoDM and PoH PSE (Power Sourcing Equipment) ports ¹ with two LEDs per port; Green LED indicates DM link status and amber LED indicates video and HDCP signal presence for each corresponding output port; Each connects to the DM 8G+ input of a DM receiver or other DM device or to an HDBaseT device via CAT5e or Crestron DM-CBL-8G DigitalMedia 8G cable ²
4	PoDM INPUT PWR	(1) Combo D-Sub 7w2, male; 48 Vdc power input for PoDM power pack ¹ ; Enables PoDM and PoH power sourcing

1. Supplying Power over DM (PoDM) or Power over HDBaseT (PoH) via a DM 8G+ output requires external power pack (sold separately).
2. The maximum cable length for DigitalMedia 8G+ (DM 8G+) or HDBaseT is 330 feet (100 meters) for resolutions up to 1600 x 1200 and 1920 x 1200 (including 1080p60 and 2K) using DM-CBL-8G DigitalMedia 8G cable, DM-CBL DigitalMedia cable, DM-CBL-D DigitalMedia D cable, or third-party CAT5e (or better) UTP or STP. For higher resolutions (including 4K), the maximum wire length is 230 feet (70 meters) using DM-CBL-8G or 165 feet (50 meters) using DM-CBL, DM-CBL-D, or CAT5e. Shielded cable and connectors are recommended to safeguard against unpredictable environmental electrical noise which may impact performance at resolutions above 1080p. Refer to the Crestron DigitalMedia Design Guide (Doc. 4546) for complete system design guidelines. DM 8G+ is compatible with HDBaseT Alliance specifications for connecting to HDBaseT compliant equipment. All wire and cables sold separately.

Hardware Hookup

Make the necessary connections as called out in the illustration below.

Hardware Connections for the DMB-4K-O-C



DMB-O-S

The DMB-O-S is an output blade that provides eight DM 8G fiber outputs. Each DM 8G fiber output enables connection to a DM 8G fiber receiver or to the input of another DM switcher. One multimode fiber optic strand is required per output, each supporting distances up to 1000 feet (300 meters) using CresFiber 8G multimode fiber optic cable.*

Specifications

Specifications for the DMB-O-S are listed in the following table.

DMB-O-S Specifications

SPECIFICATION	DETAILS
Video	
Output Signal Type	DM 8G fiber (DigitalMedia over one multimode fiber optic strand)*
Formats	DM 8G with Deep Color and 3D, HDCP content protection support
Output Resolutions	
Progressive	640 x 480 @ 60 Hz 720 x 480 @ 60 Hz (480p) 720 x 576 @ 50 Hz (576p) 800 x 600 @ 60 Hz 848 x 480 @ 60 Hz 852 x 480 @ 60 Hz 854 x 480 @ 60 Hz 1024 x 768 @ 60 Hz 1024 x 852 @ 60 Hz 1024 x 1024 @ 60 Hz 1280 x 720 @ 50 Hz (720p50) 1280 x 720 @ 60 Hz (720p60) 1280 x 768 @ 60 Hz 1280 x 800 @ 60 Hz 1280 x 960 @ 60 Hz 1280 x 1024 @ 60 Hz 1360 x 768 @ 60 Hz 1365 x 1024 @ 60 Hz 1366 x 768 @ 60 Hz 1400 x 1050 @ 60 Hz 1440 x 900 @ 60 Hz 1600 x 900 @ 60 Hz 1600 x 1200 @ 60 Hz 1680 x 1050 @ 60 Hz

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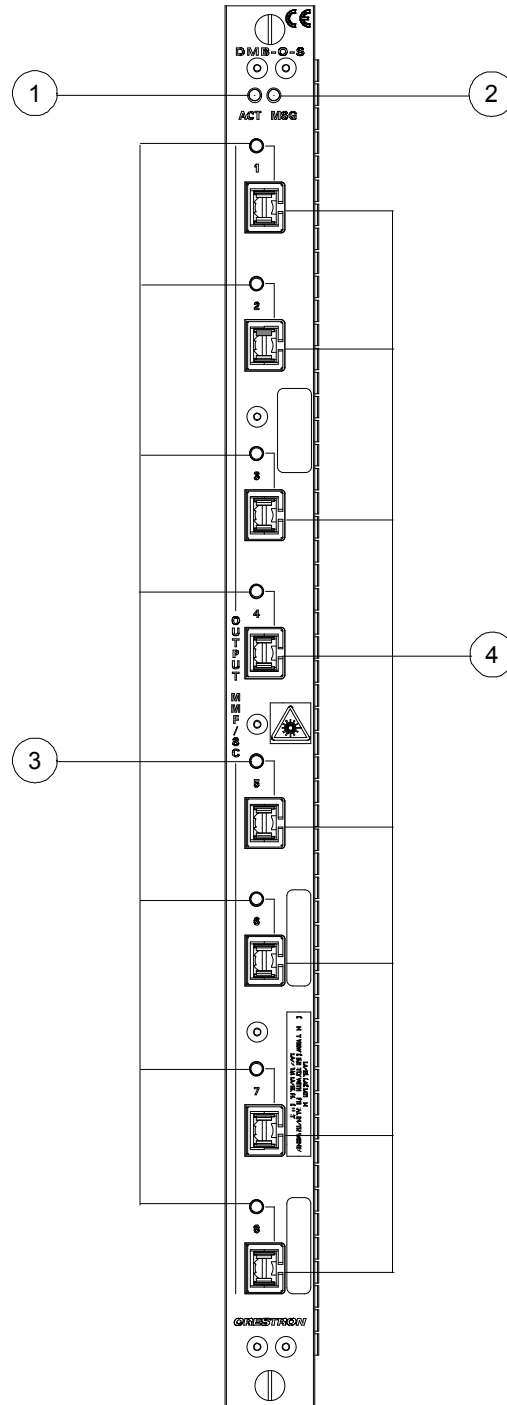
* The maximum DigitalMedia 8G fiber (DM 8G fiber) cable length is 1000 feet (300 meters) using CRESFIBER8G fiber optic cable or 500 feet (150 meters) using standard CRESFIBER, CRESFIBER-SINGLE-SC, or third-party OM3 simplex multimode fiber optic cable.

DMB-O-S Specifications (Continued)

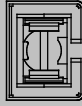
SPECIFICATION	DETAILS
Video	
Output Resolutions	
Progressive (Continued)	1920 x 1080 @ 24 Hz (1080p24) 1920 x 1080 @ 25 Hz (1080p25) 1920 x 1080 @ 50 Hz (1080p50) 1920 x 1080 @ 60 Hz (1080p60) 1920 x 1200 @ 60 Hz 2048 x 1080 @ 24 Hz 2048 x 1152 @ 60 Hz plus any other resolution allowed by HDMI up to 165 MHz pixel clock
Interlaced	720 x 480 @ 30 Hz (480i) 720 x 576 @ 25 Hz (576i) 1920 x 1080 @ 25 Hz (1080i25) 1920 x 1080 @ 30 Hz (1080i30) plus any other resolution allowed by HDMI up to 165 MHz pixel clock
Audio	
Output Signal Type	DM 8G fiber
Formats	Dolby Digital, Dolby Digital EX, Dolby Digital Plus, Dolby TrueHD, DTS, DTS-ES, DTS 96/24, DTS-HD High Res, DTS-HD Master Audio, up to 8-channel PCM
Construction	Plug-in blade, occupies (1) DM switcher output blade slot, includes metal faceplate with black finish
Weight	1.6 lb (726 g)
Available Accessories	
CRESFIBER-CONN-SC50UM-12	CresFiber Fiber Optic Cable Connector
CRESFIBER-SINGLE-SC	CresFiber Simplex Fiber Optic Cable Assembly, 50/125, SC
CRESFIBER-SINGLE-SC-ARMORED	CresFiber ARMORED Simplex Fiber Optic Cable Assembly, 50/125, SC
CRESFIBER-SINGLE-SC-CLEAR	CresFiber CLEAR Simplex Fiber Optic Cable Assembly, 50/125, SC
CRESFIBER-TK	CresFiber Termination Kit
CRESFIBER8G	CresFiber 8G Multimode Fiber Optic Cable

Physical Description

Connectors and indicators are shown below.

DMB-O-S Connectors and Indicators

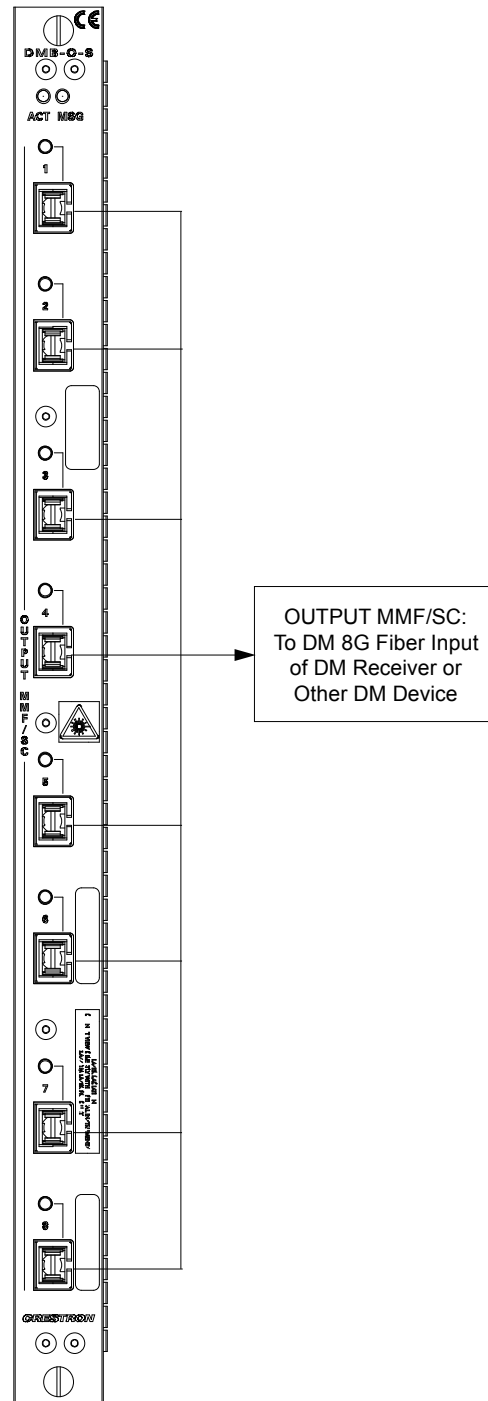
Connectors and Indicators

#	CONNECTORS AND INDICATORS	DESCRIPTION
1	ACT LED	(1) Green LED, indicates blade activity
2	MSG LED	(1) Red LED, indicates an error message has been generated
3	OUTPUT MMF/SC	(8) Green LEDs, indicate DM link status for each corresponding output
4	OUTPUT MMF/SC 1-8 	(8) SC female optical fiber connectors; DM 8G fiber outputs; Each connects to the DM 8G fiber input of a DM receiver or other DM device via CRESFIBER8G multimode fiber optic cable*

* The maximum DigitalMedia 8G fiber (DM 8G fiber) cable length is 1000 feet (300 meters) using CRESFIBER8G fiber optic cable or 500 feet (150 meters) using standard CRESFIBER, CRESFIBER-SINGLE-SC, or third-party OM3 simplex multimode fiber optic cable.

Hardware Hookup

Make the necessary connections as called out in the illustration below.

Hardware Connections for the DMB-O-S

NOTE: Fiber optic cable connectors and cable ends should be protected from contamination and scratching at all times. When cable is not connected, protect the optical transceivers on the DMB-O-S by using the included caps. Fiber ends should be handled carefully and the cable should not be bent or coiled tightly.

DMB-O-S2

The DMB-O-S2 is an output blade that provides eight DM 8G SM fiber outputs. Each DM 8G SM fiber output enables connection to a DM 8G SM fiber receiver or to the input of another DM switcher. One single-mode fiber optic strand is required per output, each supporting distances up to 7.5 miles (12 km) using CresFiber 8G SM or G.652.D single-mode fiber.*

Specifications

Specifications for the DMB-O-S2 are listed in the following table.

DMB-O-S2 Specifications

SPECIFICATION	DETAILS
Video	
Output Signal Type	DM 8G SMF (DigitalMedia over one single-mode fiber optic strand)*
Formats	DM 8G with Deep Color and 3D, HDCP content protection support
Output Resolutions	
Progressive	640 x 480 @ 60 Hz 720 x 480 @ 60 Hz (480p) 720 x 576 @ 50 Hz (576p) 800 x 600 @ 60 Hz 848 x 480 @ 60 Hz 852 x 480 @ 60 Hz 854 x 480 @ 60 Hz 1024 x 768 @ 60 Hz 1024 x 852 @ 60 Hz 1024 x 1024 @ 60 Hz 1280 x 720 @ 50 Hz (720p50) 1280 x 720 @ 60 Hz (720p60) 1280 x 768 @ 60 Hz 1280 x 800 @ 60 Hz 1280 x 960 @ 60 Hz 1280 x 1024 @ 60 Hz 1360 x 768 @ 60 Hz 1365 x 1024 @ 60 Hz 1366 x 768 @ 60 Hz 1400 x 1050 @ 60 Hz 1440 x 900 @ 60 Hz 1600 x 900 @ 60 Hz 1600 x 1200 @ 60 Hz 1680 x 1050 @ 60 Hz 1920 x 1080 @ 24 Hz (1080p24) 1920 x 1080 @ 25 Hz (1080p25) 1920 x 1080 @ 50 Hz (1080p50) 1920 x 1080 @ 60 Hz (1080p60) 1920 x 1200 @ 60 Hz 2048 x 1080 @ 24 Hz 2048 x 1152 @ 60 Hz plus any other resolution allowed by HDMI up to 165 MHz pixel clock

(Continued on following page)

* The maximum DigitalMedia 8G single-mode fiber (DM 8G SM fiber) cable length is 7.5 miles (12 km) using CRESFIBER8G-SM or third-party G.652.D (or better) single-mode fiber optic cable.

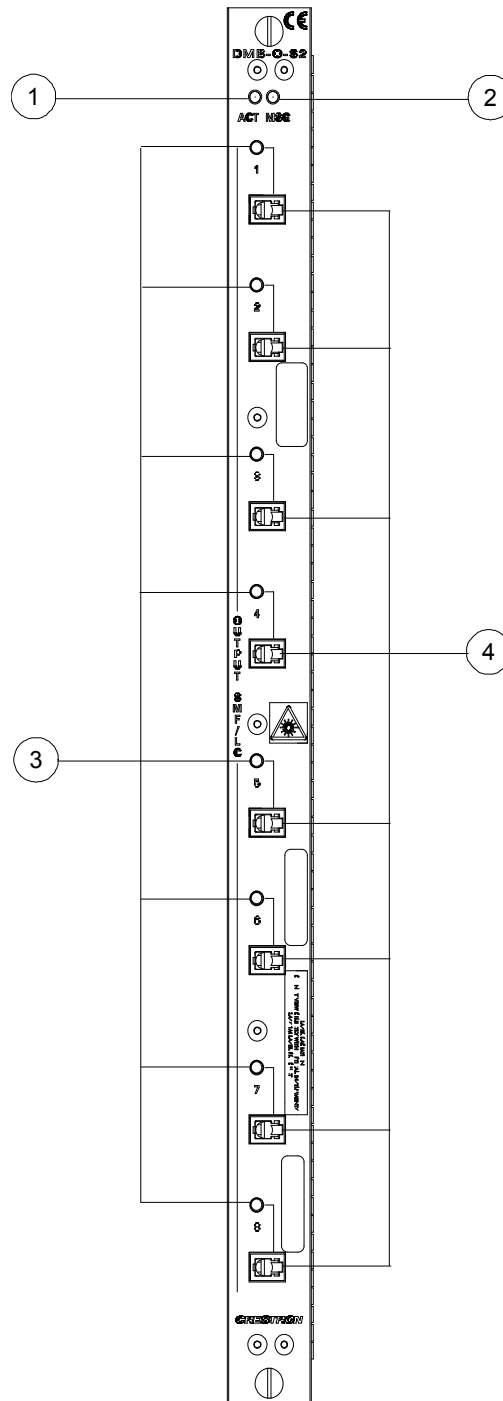
DMB-O-S2 Specifications (Continued)

SPECIFICATION	DETAILS
Video Output Resolutions (Continued) Interlaced	720 x 480 @ 30 Hz (480i) 720 x 576 @ 25 Hz (576i) 1920 x 1080 @ 25 Hz (1080i25) 1920 x 1080 @ 30 Hz (1080i30) plus any other resolution allowed by HDMI up to 165 MHz pixel clock
Audio Output Signal Type Formats	DM 8G SMF Dolby Digital, Dolby Digital EX, Dolby Digital Plus, Dolby TrueHD, DTS, DTS-ES, DTS 96/24, DTS-HD High Res, DTS-HD Master Audio, up to 8-channel PCM
Construction	Plug-in blade, occupies (1) DM switcher output blade slot, includes metal faceplate with black finish
Weight	1.6 lb (726 g)
Available Accessories CRESFIBER-SM-CONN-LC- 12 CRESFIBER-TK CRESFIBER8G-SM	CresFiber Single-Mode Fiber Optic Cable Connectors CresFiber Termination Kit CresFiber 8G Single-Mode Fiber Optic Cable


Physical Description

Connectors and indicators are shown below.

DMB-O-S2 Connectors and Indicators



Connectors and Indicators

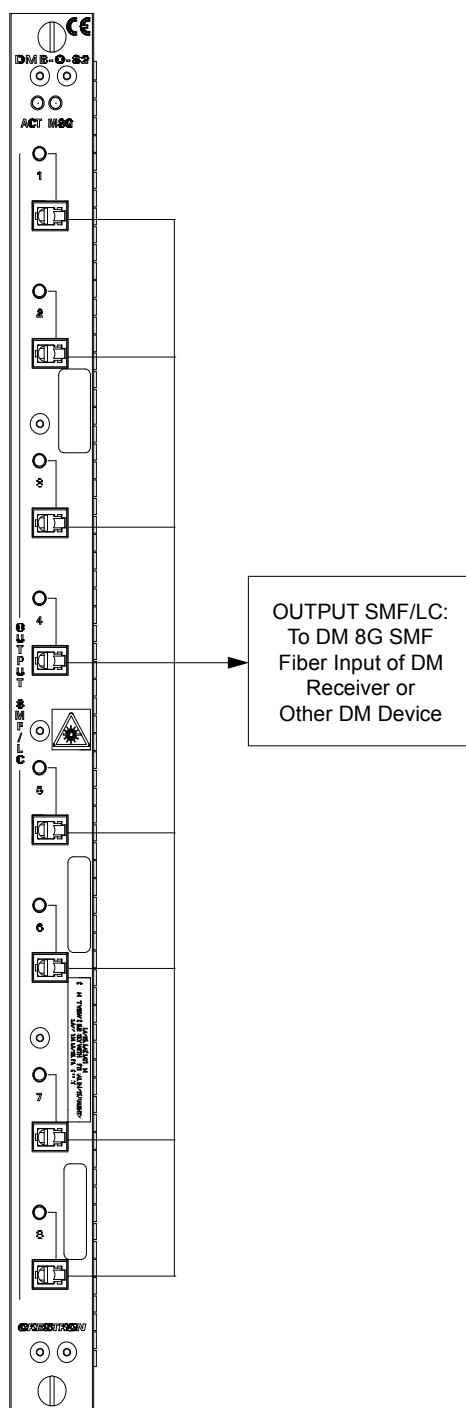
#	CONNECTORS AND INDICATORS	DESCRIPTION
1	ACT LED	(1) Green LED, indicates blade activity
2	MSG LED	(1) Red LED, indicates an error message has been generated
3	OUTPUT SMF/LC LEDs	(8) Green LEDs, indicate DM link status for each corresponding output
4	OUTPUT SMF/LC 1-8 	(8) LC female optical fiber connectors; DM 8G single-mode fiber outputs; Each connects to the DM 8G SMF input of a DM receiver or other DM device via CRESFIBER8G-SM single-mode fiber optic cable*

* The maximum DigitalMedia 8G single-mode fiber (DM 8G SM fiber) cable length is 7.5 miles (12 km) using CRESFIBER8G-SM or third-party G.652.D (or better) single-mode fiber optic cable.

Hardware Hookup

Make the necessary connections as called out in the illustration below.

Hardware Connections for the DMB-O-S2



NOTE: Fiber optic cable connectors and cable ends should be protected from contamination and scratching at all times. When cable is not connected, protect the optical transceivers on the DMB-O-S2 by using the included caps. Fiber ends should be handled carefully and the cable should not be bent or coiled tightly.

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